Volume I of
Contract Documents for

Marion Bragg Landfill Closure
Marion, Indiana

Prepared for:

Marion Bragg P.R.P. Group

Design Engineer:

Perland Environmental Technologies, Inc.
8 New England Executive Park
Burlington, Massachusetts 01803

Consoer, Townsend & Associates, Inc.
Consulting Engineers
303 East Wacker Drive
Chicago, Illinois 60601

CONTRACT DOCUMENTS

FOR CONSTRUCTION OF

MARION BRAGG LANDFILL CLOSURE

MARION, INDIANA

FOR

MARION BRAGG P.R.P. GROUP

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BIDDING DOCUMENTS

CLOSURE OF
MARION BRAGG LANDFILL SITE
MARION, INDIANA

INVITATION TO BID

1. RECEIPT OF BIDS

Sealed bids for the construction of a landfill closure for the Marion Bragg Landfill site are invited and will be received by the Marion Bragg P.R.P. Group (hereinafter called GROUP),

c/o de maximis, Inc.
9041 Executive Park Drive, Suite 601
Knoxville, TN 37923
ATTN: Michael A. Miller.

on or before 4:00 PM local time on _____, 1989, and immediately thereafter all bids will be publicly opened and the prices read aloud.

Sealed envelopes or packages containing bids shall be marked or endorsed, "Bids for Marion Bragg Landfill Closure."

No bid will be considered unless it is made on the proposal form which is included in the Contract Documents. The proposal must not be removed from, but must be kept bound with, such other sections of the Contract Documents with which it has been bound by the GROUP.

2. PRE-BID MEETING

A pre-bid meeting will be held on _____
at _____

Bidders will be taken to the project site and allowed ample time to inspect the site and determine site conditions. If the Bidder wishes to visit the site at any time other than this scheduled pre-bid meeting visit, he must notify the Group at least five working days in advance. Group will provide a representative who will accompany the Bidder on the site and a fee will be charged. For safety reasons, unaccompanied site visits will not be permitted.

It shall be the Bidder's duty to inform himself of site conditions prior to submitting a bid.

Failure to visit the site will in no way relieve the Bidder of this obligation.

Minutes of the pre-bid meeting, containing a list of attendees and responses to bidder's questions will be issued within five working days after the meeting.

3. **GENERAL DESCRIPTION OF WORK**

The above designated work referred to as the Marion Bragg Landfill Closure, on which bids are requested, will include the following:

Clean up of solid waste material and locating, characterization, and proper disposal of potential hazardous waste on the 73 acre landfill site.

The furnishing and installation of approximately 56,400 cubic yards of common fill material and rough grading of the site.

The hauling, handling and installation of approximately 121,500 cubic yards of clay fill provided by others, and compaction into an impervious cap.

The furnishing and installation of approximately 30,500 cubic yards of topsoil.

The furnishing of erosion protection, fine grading and seeding of portions of the site.

The furnishing and installation of approximately 6200 square yards of gravel roadway.

The furnishing and installation of ten groundwater monitoring wells.

The sealing and proper abandonment of approximately 800 lineal feet monitoring and drinking water wells.

The furnishing and installation of approximately 8100 lineal feet of chain link fence and gates.

Portions of the Work may involve exposure to, or handling of hazardous wastes as defined by the Resource Conservation and Recovery Act of 1976 as amended (RCRA). Contractor shall be responsible for all personnel and environmental safety precautions which may be necessary.

For bidding purposes, Level D hazards, as defined in Appendix B of 29 CFR 1910.120, shall be assumed. Contractor shall, in any case, make his own determination of the appropriate level of hazard and shall take the appropriate protective measures.

Contractor will be required to certify that all construction materials are free of hazardous waste or any hazardous chemicals. Contractor shall submit his sampling and analysis plan for

construction engineering representatives approval prior to causing any materials to be delivered to the site.

All soil materials to be furnished, including Common Fill, Impervious Cap, and Topsoil, will be analyzed by an independent laboratory to be paid for by the GROUP. A minimum of one sample per 10,000 cu. yds. will be taken and analyzed, using methods approved by the US E.P.A., for Priority Pollutants.

Each worker to be employed on the site, shall receive health and safety training in accordance with OSHA requirements and Appendix B of 29 CFR 1910.120.

If this work is not completed within 300 calendar days, the contractor will be responsible for liquidated damages as follows:

4. LIQUIDATED DAMAGES

	Days Late	Liquidated Damaged Per Day
Late Submittals or Reports	1 - 7	$ 100.00
	8 - 30	$ 500.00
	After 30	$ 1,000.00
Late Construction Work	1 - 7	$ 500.00
	8 - 30	$ 2,500.00
	31 - 60	$ 5,000.00
	After 60	$ 10,000.00

5. CONTRACT DOCUMENTS

Copies of the contract documents required for review or bidding purposes may be obtained only from

Marion Bragg P.R.P. Group
c/o de maximis, Inc.
9041 Executive Park Drive, Suite 601
Knoxville, TN 37923
ATTN: Michael A. Miller.

upon payment of the sum of one hundred dollars ($100.00) for each set of documents. This deposit is non refundable.

A copy of the contract documents, including Contract Drawings, is on file and available for inspection at the offices of the Marion Bragg P.R.P. Group at the above address; at the offices of

Perland Environmental Technologies, Inc.
8 New England Environmental Park
Burlington, MA 01803

and at the offices of

Consoer, Townsend & Associates
303 East Wacker Drive, Suite 600
Chicago, IL 60601.

6. BID SECURITY

Bidders shall submit a bid bond, cashier's check or certified check payable to the Marion Bragg P.R.P. Group in the amount of five percent (5%) of the total bid. This security shall be a guarantee that the bidder will, within fifteen (15) business days after the date of the award of a contract, execute an agreement and file bonds and insurance as required by the Contract Documents if his bid is accepted.

If an intended awardee fails to execute and file an agreement, bonds and insurance as required by the Contract Documents, the amount of the bid security submitted with his bid will be forfeit as liquidated damages.

7. HOLDING OF BIDS

Bids may not be withdrawn after opening of bids, without the consent of the GROUP, for a period of ninety (90) days after the scheduled time for opening bids.

8. RETURN OF BID SECURITIES

The bid securities of the three lowest responsive, responsible bidders will be returned after the execution of an Agreement with the successful bidder and the approval of his bonds and insurance. Bid securities of all other bidders will be returned promptly after the bids have been opened and reviewed by the Group. If all bids are rejected, the securities will be returned at the time of the rejection.

9. FUNDING OF PROJECT

This project is funded in part by the U.S. Environmental Protection Agency under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

10. BONDS AND INSURANCE

Each bid shall be accompanied by a letter from a surety company, licensed to do business in Indiana, stating that it will execute the required bonds for the bidder upon award of the contract. The

successful bidder will be required to furnish a satisfactory Payment Bond and a Faithful Performance Bond, each in the sum of the full amount of the contract. In addition, each bid shall be accompanied by a letter from the bidder's insurance representative, certifying that said insurer has read the insurance requirements as set forth in the General Conditions of Contract, and will issue the required policies upon award of a contract.

11. QUALIFICATION OF BIDDERS

It is the intention of the GROUP to award a contract only to a bidder who furnishes satisfactory evidence that he has the requisite experience and ability and that he has sufficient capital, facilities and plant to enable him to prosecute the work successfully and promptly, and to complete the work within the time specified in the Contract Documents. This evidence as set forth in the Bid Form shall be submitted with the bidders's bid.

12. AWARD OF CONTRACT

The award of any contract will be made by the Marion Bragg P.R.P. Group. In determining who is the lowest responsive, responsible bidder, the GROUP will consider the Total Base Bids, and all other relevant facts or matters mentioned in the Contract Documents or which the GROUP may legally consider in determining who is the lowest responsive, responsible bidder.

The GROUP reserves the right to reject any bid for failure to comply with all requirements of this notice or the Contract Documents; however, it may waive any minor defects or informalities at its sole discretion. The GROUP further reserves the right to reject any or all bids or to award a contract which in its sole judgement is in the best interests of the Marion Bragg P.R.P. Group.

Dated this _____ day of _____, 1989.

Marion Bragg P.R.P. Group

_____

_____

_____

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FOR
INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

1. EXAMINATION OF SITE

Each bidder, by making his bid, represents that he has examined the site and familiarized himself with all the conditions under which the work is to be performed. No extra compensation will be allowed by reason of any matters or things concerning which the bidder did not inform himself prior to bidding.

2. EASEMENTS

Portions of the improvements under this project will be constructed on private property for which easements have been secured by GROUP. Work performed on, or use of such easements, shall be subject to the provisions of the easement agreements on file and open to inspection in the office of GROUP.

3. EXAMINATION OF BIDDING DOCUMENTS

Each bidder, by making his bid, represents that he has read and understands the Bidding Documents. The bidder shall include in his bid, any and all costs that may be necessary to complete the Work in accordance with the requirements of the Contract Documents.

4. SUBSURFACE EXPLORATION DATA

4.1 Group has not made soil borings at the site of the proposed work.

4.2 The Contract Documents contain copies of monitoring well drilling logs and well construction summary sheets. This information is included for abandonment of wells under Section 2N, as Appendix B.

5. INTERPRETATION OF CONTRACT DOCUMENTS

Questions regarding documents, discrepancies, omissions, or intent of the Specifications or Drawings shall be submitted in writing to GROUP through Construction Engineer Representative at least seven days prior to opening of bids to provide time for issuing and forwarding an Addendum. Any interpretation of the Contract Documents will be made only by Addendum duly issued or delivered by GROUP to each person receiving a set of Documents. GROUP will not be responsible for any other explanations or interpretations of the Contract Documents.

6. MATERIAL SUBSTITUTION

Each bidder shall base his bid upon the materials and equipment as described in the Bidding Documents. The successful Contractor will not be allowed to make any substitutions on his own initiative, but in each instance will be required to obtain authorization from GROUP before installing any work in variance with the requirements of the Contract Documents.

7. APPROXIMATE QUANTITIES

On all items on which bids are to be received on a unit price basis the quantities stated in the Bid will not be used in establishing final payment due Contractor. The quantities stated, on which unit prices are invited, are approximate only. Bids will be compared on the basis of number of units stated in the Bidding Schedule. Payment on the Contract on unit price items will be based on the actual number of units installed in the completed work as defined in the Contract Documents.

8. PREPARATION OF BID

Only bids which are made out on the Bid Form included in this Document will be considered. The Bid Form must not be separated from this Document. Amounts are to be shown in both words and figures. In case of discrepancy between words and figures the words shall prevail, unless it clearly appears in GROUP's opinion that the words rather than the figures are in error. If any portion of the Bid is required to be given in unit prices and totals and a discrepancy exists between the unit prices and totals, the unit prices shall prevail, unless it clearly appears in GROUP's opinion that the unit prices rather than the totals are in error. If a discrepancy exists between the total base bid and the true sum of the individual bid items, the true sum shall prevail. A bid will be rejected if it does not contain a price for each and every item named in the Bidding Schedule. Bidders are warned against making any erasures or alterations of any kind, and bids which contain omissions, erasures, conditions, alterations, or additions not called for may be rejected.

9. SIGNING OF BID

If the bidder is a corporation, the legal name of the corporation shall be set forth together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If bidder is a co-partnership, the true name of the firm shall be set forth together with the signatures of a partner or partners authorized to bind the partnership. If bidder is an individual, his signature shall be inscribed. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a power of attorney must be on file with GROUP prior to opening bids or submitting bids; otherwise, the bid may be regarded as irregular.

10. BID SECURITY

No bid will be considered unless accompanied by a bid security as defined in the Invitation to Bid, as a guarantee that if the bid is accepted the bidder will execute the Agreement and file bonds and insurance as required by the Contract Documents within 15 days from the date of the award of the Contract.

11. RETURN OF BID SECURITIES

The bid securities of the three lowest responsive, responsible bidders will be held until the Agreement has been executed by the successful bidder and he has filed with GROUP the required bonds and insurance. Bid securities of all other bidders will be returned to the respective bidders.

12. AGREEMENT, BONDS, INSURANCE

The attention of bidders is specifically directed to the forms of Agreement and bonds to be executed and types of insurance to be taken out in the event a contract award is made.

13. DESIGNATION OF SUBCONTRACTORS

Each bidder shall list the names and addresses of all subcontractors who will perform work or labor or render service to the bidder on or about the construction site in an amount in excess of five percent of the bidder's total base bid. Each bidder shall show on the tabulation of subcontractors portion of the work to be done by each subcontractor.

14. BID SUBMITTAL

Each bid, properly signed, together with the bid security and all Documents bound herewith, shall be enclosed in a sealed envelope addressed and entitled as specified in the Invitation to Bid and delivered to the office designated in the Invitation to Bid. All Addenda issued shall be included with the Documents at the time of bid submittal.

15. WITHDRAWAL OF BID

Any bid may be withdrawn at any time prior to the hour fixed in the Invitation to Bid for the opening of bids, provided that a request in writing, executed by the bidder, or his duly authorized representative, for the withdrawal of such bid is filed with GROUP prior to the time specified for opening of bids. The withdrawal of a bid will not prejudice the right of a bidder to file a new bid.

16. QUALIFICATION OF BIDDERS

16.1 It is the intention of GROUP to award a contract only to a bidder who furnishes satisfactory evidence that he has the requisite experience and ability and that he has sufficient capital, facilities, and equipment to enable him to prosecute the work successfully and promptly, and to complete the work within the time specified in the Contract Documents.

16.2 Each bidder shall submit with his bid the executed Indiana Board of Accounts Form 96-A contained in this Document.

17. DISQUALIFICATION OF BIDDERS

More than one bid for the same work described in this Document from an individual, firm or partnership, a corporation or an association under the same or different names, will not be considered. Reasonable grounds for believing that any bidder is interested in more than one bid for the work contemplated will cause the rejection of all bids in which such bidder is interested. If there is reasonable grounds for believing that collusion exists among the bidders, the bids of the participants in such collusion will not be considered.

18. PREQUALIFICATION OF CONTRACTORS

18.1 Each Bid must be accompanied by properly filled out and attested questionnaires covering the experience of the Bidder, the plan of operation, and the equipment proposed to be used if awarded a Contract, and a financial statement of the Bidder.

18.2 The Indiana State Board of Accounts prescribed form of questionnaire and statement shall be used. A copy of such forms are included in this Document and consist of the following:

State Board of Accounts, Form 96-A, Pages 1 to 3

Experience Questionnaire, Pages 4 to 5

Plan and Equipment Questionnaire, Pages 6 to 8

Financial Statement, Pages 9 to 15

18.3 These forms are designed to cover contracts for all kinds of work and each Bidder is required to answer such questions as are pertinent to the work upon which he is bidding. The purpose of the questionnaire and financial statement, as set forth in the law, is to enable GROUP to determine the qualification of the Bidder to carry out the Contract successfully if it is awarded to him.

18.4 Each Bidder should answer fully all questions coming within the range of the work upon which he is bidding, and make certain the the questionnaire and the statement are properly signed and the signature properly attested. Particular attention should be given to "Financial Statement" and the details set out therein relative to assets and liabilities. This form is prepared in extensive detail so that each Bidder may explain his assets and liabilities in proper sequence and in a uniform manner.

19. NON-COLLUSION AFFIDAVIT

The attention of bidders is directed to the state requirement that a non-collusion affidavit completely executed by each qualified bidder shall be submitted as part of his bid. The form of affidavit is included in this Document.

20. PENALTY FOR COLLUSION

If at any time it shall be found that the person, firm, or corporation to whom the Contract has been awarded has, in presenting any bid or bids, colluded with any other party or parties, then the Contract so awarded shall be null and void, and Contractor and his sureties shall be liable to GROUP for all loss or damage which GROUP may suffer thereby, and GROUP may advertise for new bids for said work.

21. LICENSE

Each bidder shall possess state and local licenses as are required by law, and shall furnish satisfactory proof to GROUP upon request that the licenses are in effect during the entire period of the Contract.

22. BID OPENING

Bids will be opened and the prices bid will be read aloud publicly at the time and place indicated in the Invitation to Bid. Bidders or their agents are invited to be present.

23. AWARD OF CONTRACT

23.1 The award of any contract will be made to the lowest responsive responsible bidder. GROUP reserves the right to reject any or all bids, or to waive irregularities or informalities at its discretion.

23.2 This project is being financed in part by federal funds, and no award can be made until after approval has been given by the appropriate regulatory agencies. The timing of these approvals is beyond the control of GROUP, but GROUP will award a Contract to the lowest responsive, responsible bidder or reject bids as soon as possible after receipt of approvals or disapprovals from the various agencies.

23.3 It is anticipated that such approvals will be received within 60 days of opening of bids. In the event that the approvals are not received or GROUP cannot award or reject said bids within 90 days from the date of opening of bids, bidders shall have the right to withdraw their bids on written notice to GROUP.

24. EFFECTIVE DATE OF AWARD

If a Contract is awarded by GROUP, such award shall be effective when formal notice of such award, signed by the authorized representative of GROUP, has been delivered to the intended awardee, or mailed to him at the main business address shown on his bid, by some officer or agent of GROUP duly authorized to give such notice.

25. EXECUTION OF AGREEMENT

Copies of the Agreement in the number stated in the Agreement will be supplied by GROUP and shall be executed by the successful bidder, and returned, together with the required bonds and insurance, within 15 days from and after the date of the Notice of Award of the Contract. Effective date of bonds shall be the same or within 15 days later than the date of the Agreement.

26. FAILURE TO EXECUTE AGREEMENT AND FILE BONDS AND INSURANCE

Failure of a successful bidder to execute the Agreement and file required bonds and insurance within the required time shall be just cause for the annulment of the award. On failure of a successful bidder to execute the Agreement and file the required bonds and insurance within the required time, he shall forfeit his bid security as agreed hereinbefore. Upon annulment of an award as aforesaid, GROUP may then award a Contract to the next lowest responsive, responsible bidder.

27. PAYMENT FOR EXCESS COSTS AND LIQUIDATED DAMAGES

The successful contractor will be required to pay for the excess cost of field engineering and inspection and liqudated damages as defined in the General Conditions of the Contract, if extensions of time are granted by GROUP because of avoidable delays as therein defined.

28. COMMENCEMENT AND COMPLETION OF WORK

The successful bidder shall commence work within 10 calendar days from and after the issuance by GROUP of a written Notice to Proceed and shall complete all work in accordance with the terms and conditions of the Contract Documents within 300 calendar days from and after the date of the Notice to Proceed. The Notice to Proceed will be issued within 10 days after execution of the Agreement.

BID FORM

PROJECT IDENTIFICATION: Marion Bragg Landfill Closure

THIS BID IS SUBMITTED TO:

Marion Bragg P.R.P. Group
C/O de maximis, Inc.,
9041 Executive Park Drive,
Suite 601
Knoxville, TN 37923
Attn: Michael A. Miller

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with GROUP in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

2. BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain open for 90 days after the day of Bid opening. BIDDER will sign the Agreement and submit the Bid Security and other documents required by the Contract Documents within fifteen days after the date of GROUP's Notice of Award.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

3.1 BIDDER has examined copies of all the Contract Documents and of the following Addenda:

Nos. ____, ____, ____, ____, ____

Receipt of all Addenda is hereby acknowledged.

3.2 BIDDER has examined copies of the Invitation to Bid and Instructions to Bidders.

3.3 BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations) and the conditions affecting cost, progress, or performance of the Work and has made such independent investigations as BIDDER deems necessary.

3.4 This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm, or a corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or over GROUP.

4. BIDDING SCHEDULE

PROJECT: MARION BRAGG LANDFILL CLOSURE
MARION, INDIANA

BID SCHEDULE
****

SUBMITTED TO: MARION BRAGG P.R.P GROUP

BIDDER will complete the Work for a Total Base Bid of:

$_____ (in words) $_____ (in figures)

This bid is broken down according to the following schedule. All work not includes in the bid items listed below. shall be incidental to the Work.

ITEM NO.	SPEC SECT	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE ($)	EXTENSION
	GC	GENERAL CONDITIONS				
1		Contractor's Field Operations	Month	10	$_____	$_____
2		Bonds (Payment and Faithful Performance)	L.Sum			$_____
3		Insurance	L.Sum			$_____
	SC	SPECIAL CONDITIONS				
4		Health & Safety Plan	L.Sum			$_____
		ADDITIONAL PERSONNEL PROTECTION BEYOND CLASS D. (WHEN ORDERED)				
5		Class C	ManDay	200	$_____	$_____
6		Class B	ManDay	100	$_____	$_____
7	1 C	SUBMITTALS	L.Sum			$_____
	1 E	TEMPORARY FACILITIES & SITE CONTROLS				
8		Temporary Utilities	Month	10	$_____	$_____
9		Const. Engineer Rep s Trailer-Field Office	Month	11	$_____	$_____
10		Site Controls	Month	10	$_____	$_____
	1 G	CONSTRUCTION CLEAN-UP				
11		Cleaning During Construction	Month	10	$_____	$_____
12		Cleaning & Decontam-ination of Equipment	L.Sum			$_____
13		Final Cleaning	L.Sum			$_____
	2 A	CLEARING				
14		Shrub & Tree Removal	L. Sum			$_____
15		Waste Removal	L. Sum			$_____

SUB-TOTAL (this page 1 of 2) $_____

ITEM NO.	SPEC SECT	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE($)	EXTENSION
16	2 B	DEMOLITION	L. Sum			$_____
	2 C	EARTHWORK				
17		Common Fill, Compacted in Place (including material, hauling & handling)	Cu.Yd.	56400	$_____	$_____
18		Impervious Cap, Compacted in Place (including trucking, hauling & handling)	Cu.Yd.	121500	$_____	$_____
19		Topsoil, Compacted in Place (including material, hauling & handling)	Cu.Yd.	30500	$_____	$_____
	2 H	SITE DRAINAGE				
20		Erosion Control Matting, in Place	Sq.Yd.	38200	$_____	$_____
21		Jute Matting, in Place	Sq.Yd.	28850	$_____	$_____
22		Siltation Control Fence, in Place	L.Ft.	10550	$_____	$_____
23	2 I	GRAVEL PAVEMENT	Sq.Yd.	6200	$_____	$_____
	2 K	SITE IMPROVEMENTS				
24		Chain Link Fence 6' High, Installed	L.Ft.	8100	$_____	$_____
25		24' Wide Gate, (two) (double leaf)	L.Ft.	48	$_____	$_____
26		3' Wide Gate, (five) (man gate)	L.Ft.	15	$_____	$_____
27		Signs on fence & gates	Each	48	$_____	$_____
	2 L	LANDSCAPING				
28		Tree: Ginkgo, in Place	Each	5	$_____	$_____
29		Shrub: Virginal Mock Orange, in Place	Each	28	$_____	$_____
30		Lawn Grass Seeding	Acre	38	$_____	$_____
31		Canary Grass Seeding	Acre	3.5	$_____	$_____
	2 N	WELLS				
32		Monitoring Wells, 10 Wells Installed	L.Ft.	380	$_____	$_____
33		Abandonment, Drinking Water Wells	L.Ft.	300	$_____	$_____
34		Abandonment, Monitoring Wells	L.Ft.	500	$_____	$_____
		TOTAL (page 1 and 2 of 2)				$_____

5. BIDDER agrees that the Work will be substantially completed and completed within the number of calendar days indicated in the Agreement.

6. BIDDER accepts the provisions of the General Conditions as to liquidated damages in the event of failure to complete the Work on time.

7. BIDDER accepts the provisions of the General Conditions as to excess cost of Construction Engineer Representative and Inspectors for overtime work and time extension.

8. The following documents are attached to and made a condition of this Bid:

Required Bid Security in the form of a certified check or bid bond in the amount of 5 percent of the bid.

A tabulation of Subcontractors and other persons and organizations required to be identified in this Bid.

Required State Board of Accounts of Indiana, Form 96-A with supporting data.

9. Communications concerning this Bid shall be addressed to the address of BIDDER indicated below.

10. The terms used in this Bid which are defined in the General Conditions of the Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED on _____, 19___

If BIDDER is: 55

An Individual 57

By _____(Individual's Name)_____(SEAL) 59

doing business as _____ 61

Business address: _____ 63

_____ 65

_____ 67

Phone No.: _____ 69

A Partnership 71

By _____(Firm Name)_____(SEAL) 73

_____

(A partner or partners authorized to bind the partnership) 75

Business address: _____ 77

_____ 79

Phone No.: _____ 81

A Corporation 83

By _____(Corporation name)_____ 85

_____(state of incorporation)_____ 87

By _____(name of person authorized to sign)_____ 89

(Corporate Seal) 91

Attest _____(Secretary)_____ 93

Business Address: _____ 95

_____ 97

_____ 99

Phone No.: _____ 101

A Joint Venture 103

By _____(Name)_____ 105

_____(Address)_____ 107

By _____(Name)_____ 109

_____(Address)_____ 111

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above). 112

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____ ,

(hereinafter called the Principal) and _____

_____ ,

(hereinafter called the Surety), a corporation chartered and existing under the laws of the State of _____ with its principal offices in the City of _____ and authorized to do business in the State of Indiana are held and firmly bound unto the Marion Bragg P.R.P. Group (hereinafter called GROUP), in the full and just sum of

_____

Dollars ($_____) good and lawful money of the United States of America, to be paid upon demand of GROUP, to which payment well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted to the GROUP, a Bid for furnishing all labor, materials, equipment, and incidentals necessary to furnish and install Marion Bragg Landfill Closure;

WHEREAS the Principal desires to file this Bond in accordance with law, in lieu of a certified bidder's check otherwise required to accompany this Bid;

NOW, THEREFORE: The conditions of this obligation are such that if the Bid be accepted, the Principal shall, whithin fifteen days after the date of receipt of a written notice of award of contract, execute a Contract in accordance with the Bid and upon the terms, conditions, and price(s) set forth therein, of the form and manner required by GROUP, and execute a sufficient and satisfactory Payment Bond and Faithful Performance Bond payable to GROUP, in an amount of One Hundred Percent (100 percent) of the total Contract Price in form and with security satisfactory to said GROUP, then this obligation to be void; otherwise to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid GROUP, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

IN TESTIMONEY WHEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this _____ day of _____, 19___.

_____
Principal

BY _____

(Seal)

_____
Surety

BY _____

(Seal)

Countersigned _____

Local Resident Producing Agent for _____

_____

STATE OF INDIANA

NON-COLLUSION AFFIDAVIT

The bidder, by its officers and _____ agents or representatives present at the time of filing this bid, being first duly sworn, say: That neither they nor any of them, have directly or indirectly entered into any combination, collusion, undertaking or agreement with any bidder or bidders to maintain the price of any contract or work, or to prevent any bidder or bidders to refrain from bidding on any contract or work, and that said bid so made is without reference or regard to any other bid or bids, and without agreement, understanding or combination, either directly or indirectly, with any other person or persons with reference to such bidding in any way or manner whatever.

_____

By _____

Subscribed and sworn to this _____

day of _____, 198___.

_____
Notary Public

My Commission Expires

_____

General Form No. 96-a
Prescribed by the State
Board of Accounts of In-
diana Revised 1949

Standard Questionnaires and Financial Statement for Bidders

Prescribed by

THE STATE BOARD OF ACCOUNTS OF INDIANA

For use in investigating and determining the qualifications of bidders on public construction when the aggregate cost of any such work or improvement will be Five Thousand Dollars or more.

These statements to be submitted under oath by each bidder with and as a part of his bid, as provided by Chapter 306, page 1248, Acts of 1947

Submitted to .....

By ..... { A Corporation / A Co-partnership / An Individual }

Address .....

.....

Date submitted ....., 19.....

Filed .....

.....

.....

.....

Sec. 2 of an Act entitled "AN ACT concerning the awarding of contracts for the performance of public work and authorizing the board of accounts to prescribe certain forms to be used in ascertaining the responsibility of contractors who submit bids for the performance of such work, providing for plans and specifications, providing for bids repealing certain laws and declaring an emergency." (Approved March 13, 1947.)

Sec. 2. Whenever the aggregate costs of any work or improvement will be five thousand dollars ($5,000.00) or more, for the purpose of enabling such board, commission, trustee, officer or agent to ascertain and determine which of the bidders submitting bids for the performance of any such public work is, in the judgment of such board, commission, trustee, officer or agent, the lowest and/or best bidder and to exercise intelligently the discretion hereby conferred on such board, commission, trustee, officer or agent each bidder shall be required to submit under oath with and as a part of his bid a statement of his experience, his proposed plan for performing such work and the equipment which he has available for the performance of such work and a financial statement. The statements hereby required shall be submitted on forms which shall be prescribed by the state board of accounts. The forms so prescribed shall be designated, respectively, as the experience questionnaire, the plan and equipment questionnaire and the contractor's financial statement, and shall be based, so far as applicable, on the standard questionnaires and financial statement for bidders as approved and recommended by the joint conference on construction practices, for use in investigating the qualifications of bidders on public construction work, and the forms so prescribed are hereby prescribed as the forms which shall hereafter be used by all such boards, commissions, trustees, officers and agents in obtaining the information which is required in the administration of this act. If the information submitted by any bidder on the forms herein prescribed is found, on examination, to be unsatisfactory, the bid submitted by such bidder shall not be considered (Burns Statutes 1933, Sec. 53-109) Sec. 2, Chapter 306, Acts of 1947.

TO THE BIDDER—

The following forms of questionnaires and financial statement are prescribed by the State Board of Accounts in conformity with the statute set out on the preceding page.

These forms, properly filled out and attested, must accompany each bid of five thousand dollars or more on any public work.

The forms are designed to cover all contracts for all kinds of work and the bidder is required to answer such questions as are pertinent to the work upon which he is bidding. The purpose of the questionnaire and financial statement, as set forth in the law, is to enable the awarding body to determine the qualifications of the bidder to carry out successfully the contract if the same is awarded to him.

The bidder will find it to his advantage to answer fully all questions coming within the range of the work upon which he is bidding. Particular attention should be given the "Financial Statement" and the details relative to the assets and liabilities set out. This form is made in extensive detail so that the bidder may explain his assets and liabilities in proper sequence and in a uniform manner.

T. M. HINDMAN,
State Examiner

Submitted by ..... ☐ A Corporation ☐ A Co-partnership ☐ An Individual

Principal Office at .....

To .....

EXPERIENCE QUESTIONNAIRE

The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made.

1. How many years has your organization been in business as a general contractor under your present business name?.....

2. How many years experience in.....construction work has your organization had: (a) As a general contractor.....(b) As a sub-contractor.....

3. What projects has your organization completed?

CONTRACT AMT.	CLASS OF WORK	WHEN COMPLETED	NAME AND ADDRESS OF OWNER

3-A. What projects has your organization now in process of construction?

CONTRACT AMT.	CLASS OF WORK	WHEN TO BE COMPLETED	NAME AND ADDRESS OF OWNER

4. Have you ever failed to complete any work awarded to you?.....If so, where and why?

5. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract?.....If so, state name of individual, other organization and reason therefor.....

6 Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name?.....If so, state name of individual, name of owner and reason therefor

7. what other lines of business are you financially interested?.....

8. For what corporations or individuals have you performed work, and to whom do you refe. '

9. For what cities have you performed work and to whom do you refer?

10. For what counties have you performed work and to whom do you refer?

11. For what State bureaus or departments have you performed work and to whom do you refer?

12. Have you ever performed any work for the U. S. Government?
If so, when and to whom do you refer?

13. What is the construction experience of the principal individuals of your organization?

INDIVIDUAL'S NAME	PRESENT POSITION OR OFFICE	YEARS OF CONSTRUCTION EXPERIENCE	MAGNITUDE AND TYPE OF WORK	IN WHA CAPACI

PLAN AND EQUIPMENT QUESTIONNAIRE

The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made.

1. In what manner have you inspected this proposed work? Explain in detail.

2. Explain your plan or layout for performing the proposed work.

3. The work, if awarded to you, will have the personal supervision of whom?

*4. Do you intend to do the hauling on the proposed work with your own forces?
If so, give amount and type of equipment to be used.

*5. If you intend to sublet the hauling or perform it through an agent, state amount of sub-contract or agent's contract, and if known, the name and address of sub-contractor or agent, amount and type of his equipment and financial responsibility.

* Items 4, 5, 6 and 7 may not be applicable in all building contracts; if not, omit.

*6. Do you intend to do the grading on the proposed work with your own forces?.....
If so, give type of equipment to be used.....

*7. If you intend to sublet the grading or perform it through an agent, state amount of sub-contract or agr
contract, and, if known, the name and address of sub-contractor or agent, amount and type of his equipment
financial responsibility.....

8. Do you intend to sublet any other portions of the work?.....If so, state amo
of sub-contract, and, if known, the name and address of the sub-contractor, amount, and type of his equipm
and financial responsibility.....

9. From which sub-contractors or agents do you expect to require a bond?.....

10. What equipment do you own that is available for the proposed work?

QUANTITY	ITEM	DESCRIPTION, SIZE, CAPACITY, ETC.	CONDITION	YEARS OF SERVICE	PRESENT LOCATION

11. What equipment do you intend to purchase for use on the proposed work, should the contract be awarded to you?

QUANTITY	ITEM	DESCRIPTION, SIZE, CAPACITY, ETC.	APPROX. COST

12. How and when will you pay for the equipment to be purchased?.....

13. Do you propose to rent any equipment for this work?.....If so, state type, quantity and reasons for renting.....

14. Have you made contracts or received firm offers for all materials within prices used in preparing your proposal? Do not give names of dealers or manufacturers.....

Dated at.....this.....day of.....19.....

.....
(Name of Organization)

By.....

.....
(Title of Person Signing)

STATE OF.....
COUNTY OF..... } ss:

.....being duly sworn, deposes and says that he is

.....of the above.....
(Name of Organization)

and that the answers to the questions in the foregoing questionnaires and all statements therein contained are true and correct.

Subscribed and sworn to before me this.....day of.....19.....

.....
Notary Public

My Commission expires.....

Contractor's Financial Statement

Submitted by ..... ☐ A Corporat ☐ A Copartn ☐ An Individ

with principal office at .....

To .....

Condition at close of business 19

	Dollars
ASSETS	
1. **Cash:** (a) On hand $....., (b) In bank $....., (c) Elsewhere $.....	
2. **Notes receivable** (a) Due within 90 days.....	
(b) Due after 90 days.....	
(c) Past due.....	
3. **Accounts receivable from completed contracts, exclusive of claims not approved for payment**.....	
4. **Sums earned on uncompleted contracts as shown by engineer's or architect's estimate**	
(a) Amount receivable after deducting retainage.....	
(b) Retainage to date, due upon completion of contracts.....	
5. **Accounts receivable from sources other than construction contracts**.....	
6. **Deposits for bids or other guarantees:** (a) Recoverable within 90 days.....	
(b) Recoverable after 90 days.....	
7. **Interest accrued on loans, securities, etc.**.....	
8. **Real estate:** (a) Used for business purposes.....	
(b) Not used for business purposes.....	
9. **Stocks and bonds:** (a) Listed—present market value.....	
(b) Unlisted—present value.....	
10. **Materials in stock not included in Item 4** (a) For uncompleted contracts (present value).....	
(b) Other materials (present value).....	
11. **Equipment, book value**.....	
12. **Furniture and fixtures, book value**.....	
13. **Other assets**.....	
Total assets.....	
LIABILITIES	
1. **Notes payable:** (a) To banks regular.....	
(b) To banks for certified checks.....	
(c) To others for equipment obligations.....	
(d) To others exclusive of equipment obligations.....	
2. **Accounts payable:** (a) Not past due.....	
(b) Past due.....	
3. **Real estate encumbrances**.....	
4. **Other liabilities**.....	
5. **Reserves**.....	
6. **Capital stock paid up:** (a) Common.....	
(b) Common.....	
(c) Preferred.....	
(d) Preferred.....	
7. **Surplus** (net worth).....	
Total liabilities.....	
CONTINGENT LIABILITIES	
1. Liability on notes receivable, discounted or sold.....	
2. Liability on accounts receivable, pledged, assigned or sold.....	
3. Liability as boudsman.....	
4. Liability as guarantor on contracts or on accounts of others.....	
5. Other contingent liabilities.....	
Total contingent liabilities.....	

IND. 96-A

DETAILS RELATIVE TO ASSETS

1 Cash (a) on hand ..... $...
(b) deposited in banks named below .....
(c) elsewhere—(state where) .....

NAME OF BANK	LOCATION	DEPOSIT IN NAME OF	AMOUNT

2* Notes receivable (a) due within 90 days ..... $.....
(b) due after 90 days .....
(c) past due .....

RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	DATE OF MATURITY	HOW SECURED	AMOUNT

Have any of the above been discounted or sold? ..... If so, state amount, to whom, and reason .....

3* Accounts receivable from completed contracts exclusive of claims not approved for payment ..... $.....

NAME AND ADDRESS OF OWNER	NATURE OF CONTRACT	AMOUNT OF CONTRACT	AMOUNT RECEIVABLE

Have any of the above been assigned, sold, or pledged? ..... If so, state amount, to whom, and reason .....

4* Sums earned on uncompleted contracts, as shown by engineer's or architect's estimate:
(a) Amount receivable after deducting retainage ..... $.....
(b) Retainage to date due upon completion of contract .....

DESIGNATION OF CONTRACT AND NAME AND ADDRESS OF OWNER	AMOUNT OF CONTRACT	AMOUNT EARNED	AMOUNT RECEIVED	RETAINAGE		AMOUNT EXCLUSIVE OF RETAINAGE
				WHEN DUE	AMOUNT	

Have any of the above been sold, assigned, or pledged? ..... If so, state amount, to whom, and reason .....

* List separately each item amounting to 10 per cent or more of the total and combine the remainder.

DETAILS RELATIVE TO ASSETS (Continued)

5 * Accounts receivable not from construction contracts ..... $.....

RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	WHEN DUE	AMOUNT

What amount, if any, is past due ..... $.....

6 Deposits with bids or otherwise as guarantees ..... $.....

DEPOSITED WITH: NAME AND ADDRESS	FOR WHAT	WHEN RECOVERABLE	AMOUNT

7 Interest accrued on loans, securities, etc. ..... $.....

ON WHAT ACCRUED	TO BE PAID WHEN	AMOUNT

8 Real estate book value { (a) Used for business purposes ..... $.....
(b) Not used for business purposes .....

	DESCRIPTION OF PROPERTY	IMPROVEMENTS: NATURE OF IMPROVEMENTS	IMPROVEMENTS: BOOK VALUE	TOTAL BOOK VALUE
1				
2				
3				
4				
5				
6				
7				

	LOCATION	HELD IN WHOSE NAME	ASSESSED VALUE	AMOUNT OF ENCUMBRANCE
1				
2				
3				
4				
5				
6				
7				

* List separately each item amounting to 10 per cent or more of the total and combine the remainder.

9 **Stocks and bonds:** (a) Listed—present market value ..... $.....
(b) Unlisted—present value .....

	DESCRIPTION	ISSUING COMPANY	LAST INT. OR DIV. PAID		PAR VALUE	PRESENT MARKET VALUE	QUANTITY	AMOUNT
			DATE	%				
1								
2								
3								
4								
5								
6								
7								

	WHO HAS POSSESSION	IF ANY ARE PLEDGED OR IN ESCROW, STATE FOR WHOM AND REASON	AMOUNT PLEDGED OR IN ESCROW
1			
2			
3			
4			
5			
6			
7			

10 **Materials in stock and not included in Item 4, Assets:**
(a) For use on uncompleted contracts (present value)..... $.....
(b) Other materials (present value).....

DESCRIPTION OF MATERIAL	QUANTITY	PRESENT VALUE	
		FOR UNCOMPLETED CONTRACTS	OTHER MATERIALS

11* **Equipment at book value**..... $.....

QUANTITY	DESCRIPTION AND CAPACITY OF ITEMS	AGE OF ITEMS	PURCHASE PRICE	DEPRECIATION CHARGED OFF	BOOK VALUE

Are there any liens against the above?..... If so, state total amount..... $.....

* If two or more items are lumped above, give the sum of their ages.

DETAILS RELATIVE TO ASSETS (Continued)

12 | Furniture and fixtures at book value ..... $

13 | Other assets ..... $

DESCRIPTION	AMOUNT

TOTAL ASSETS $

DETAILS RELATIVE TO LIABILITIES

1 | Notes payable
(a) To banks, regular ..... $
(b) To banks for certified checks .....
(c) To others for equipment obligations .....
(d) To others exclusive of equipment obligations .....

TO WHOM: NAME AND ADDRESS	WHAT SECURITY	WHEN DUE	AMOUNT

2 | Accounts payable
(a) Not past due ..... $
(b) Past due .....

TO WHOM: NAME AND ADDRESS	FOR WHAT	DATE PAYABLE	AMOUNT

3 | Real estate encumbrances (See Item 8, Assets) ..... $

4 | Other liabilities ..... $

DESCRIPTION	AMOUNT

5 | Reserves ..... $

INTEREST	INSURANCE	BLDGS. & FIXT.	PLANT DEPR.	TAXES	BAD DEBTS		
$	$	$	$	$	$	$	$

6 | Capital stock paid up
(a) Common ..... $
(b) Preferred .....

7 | Surplus ..... $

TOTAL LIABILITIES $

If a corporation answer this:

Amount for which incorporated.....

Capital paid in cash..... $.....

When incorporated.....

In what state.....

Names and titles of all persons having authority to execute and receipt estimate vouchers and to conduct other business for the corporation, including its officers, the signatures of whom are legally binding.

.....

.....

.....

.....

.....

Do you have necessary "certificate of authority" to transact corporate business in this state, under the terms of Chapter 215, Acts of 1929, and acts amendatory thereto?.....

If a co-partnership answer this:

Date of organization.....

State whether co-partnership is general, limited or association.....

Give the names, addresses and proportional interests of all parties:

Name	Address	Share
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....
.....	.....	$.....

The name of the partnership firm under which the above partners are operating is ....

Give names and titles of all persons having authority to execute and receipt estimate vouchers and to conduct other business for the partnership, the signatures of whom are legally binding.

....

....

The undersigned hereby declares that the foregoing is a true statement of the financial condition of the individual, co-partnership corporation herein first named, as of the date herein first given; that this statement is for the express purpose of inducing the party to whom it is submitted to award the submittor a contract; and that any depository, vender or other agency herein named is hereby authorized to supply such party with any information necessary to verify this statement.

....

NOTE. A co-partnership must give firm name and signatures of all partners. A corporation must give full corporate name, signature of official and affix corporate seal.

....

....

....

Affidavit for Individual

STATE OF .... }
COUNTY OF .... } ss:

....being duly sworn, deposes and says that the foregoing financial statement, taken from his books, is a true and accurate statement of his financial condition as of the date thereof and that the answers to the foregoing interrogatories are true.

Subscribed and sworn to before me this

....
(Applicant must sign here)

day of..19...

....
Notary Public

Affidavit for Co-Partnership

STATE OF .... }
COUNTY OF .... } ss:

.... being duly sworn, deposes and says that he is a member of the firm of ...., that he is familiar with the books of the said firm showing its financial condition, that the foregoing financial statement, taken from the books of the said firm, is a true and accurate statement of the financial condition of the said firm as of the date thereof and that the answers to the foregoing interrogatories are true.

Subscribed and sworn to before me this

....
(Member of firm must sign here)

day of..19...

....
Notary Public

Affidavit for Corporation

STATE OF .... }
COUNTY OF .... } ss:

.... being duly sworn, deposes and says that he is .... of the ...., the corporation described in and which executed the foregoing statement; that he is familiar with the books of the said corporation showing its financial condition, that the foregoing financial statement, taken from the books of the said corporation, is a true and accurate statement of the financial condition of said corporation as of the date thereof and that the answers to the foregoing interrogatories are true.

Subscribed and sworn to before me this

....
(Officer must sign here)

day of..19...

....
Notary Public

CONTRACTUAL DOCUMENTS

AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____ in the year 19____ by and between Marion Bragg P.P.P. Group (hereinafter called GROUP) and _____ (hereinafter called CONTRACTOR).

GROUP and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

1.1 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

1.2 Installation of an impervious cap at the Marion Bragg Landfill and clearing and grubbing, filling and grading, seeding, fencing, monitoring wells and all associated work.

Article 2. ENGINEER

The Project has been designed under the authority of de maximis Environmental Project Management P.O. Box 90348, Knoxville, TN 37990 who is hereinafter called ENGINEER and who will assume those duties and responsibilities and will have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. STARTING AND COMPLETION

The Contractor agrees to commence work under this Contract within 10 calendar days after receipt from the GROUP of a formal Notice to Proceed, and to fully complete all work included in this contract to the point of final acceptance by the Owner within 300 consecutive calendar days from and including said date. The Contractor agrees to furnish and deliver to the GROUP within fifteen (15) days after award of this contract the Payment Bond and the insurance certificate(s) and policies required of him by the provisions of the General Conditions of Contract, and to do all other things required of him by the Contract Documents prerequisite to starting work.

Article 4. CONTRACT PRICE

GROUP shall pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in current funds as shown on Exhibit A, the Bid Schedule, attached.

Article 5. PAYMENTS TO CONTRACTOR

GROUP agrees with said CONTRACTOR to employ, and does hereby employ, the said CONTRACTOR to provide the materials and do all the work and all other things herein contained or referred to, for the prices aforesaid and hereby contracts to pay the same at the time, in the manner and upon the conditions set forth or referred to in the Contract Documents; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained.

Article 6. EXTRA WORK

It is expressly understood and hereby agreed to by the CONTRACTOR that no claim for extra work will be recognized by the GROUP unless such extra work has been ordered in writing by the GROUP and unless a claim for all such extra work has been filed with the Construction Engineer Representative by the CONTRACTOR within five (5) days after the end of the calendar month in which such alleged work was performed.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce GROUP to enter into this Agreement, CONTRACTOR makes the following representations:

7.1. CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal, state, and local laws, ordinances, rules, and regulations that in any manner may affect cost, progress, or performance of the Work.

7.2. CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress, or performance of the Work which were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in the Instructions to Bidders.

7.3. CONTRACTOR has made or caused to be made examinations, investigations, and tests and studies of such reports and related data in addition to those referred to in paragraph 7.2 as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports, or similar data are or will be required by CONTRACTOR for such purposes.

7.4. CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the terms and conditions of the Contract Documents.

7.5. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR

Article 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between GROUP and CONTRACTOR are attached to this Agreement, made a part hereof, and consists of the following:

Invitation to Bid.

Instructions to Bidders.

CONTRACTOR'S Bid.

This Agreement (pages 1 to _____, inclusive).

Exhibits to this Agreement (pages ____ to ____, inclusive).

Bonds.

Notice of Award.

Notice to Proceed.

General Conditions.

Special Conditions.

Specifications, as listed in Table of Contents of this Volume I of the Contract Documents.

Drawings, as listed in volume II of the Contract Documents.

Addenda numbers ____ to ____, inclusive.

Any Modification, including Change Orders, duly delivered after execution of Agreement.

Documentation submitted by CONTRACTOR prior to Notice of Award.

Health and Safety Plan, Volume III

Consent Decree, Volume IV

There are no Contract Documents other than those listed above in this Article. The Contract Documents may only be altered, amended, or repealed by a Modification (as defined in the General Conditions).

Article 9. MISCELLANEOUS

9.1. Terms used in this Agreement which are defined in the General Conditions shall have the meanings indicated in the General Conditions.

9.2. No assignment by a party herto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignement no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3. GROUP and CONTRACTOR each binds himself, his partners, successors, assigns, and legal representatives to the other party hereto, his partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

Article 10. CONFLICT BETWEEN COMPONENT PARTS OF CONTRACT

In the event that any provision in any of the following component parts of this Contract conflicts with any provision in any other of the following components parts, the provision in the component part first enumerated below shall govern over any other component part which follows it numerically except as may be otherwise specially stated. Said component parts are the following:

1. Addenda Nos._____,_____,_____, and _____

2.	Consent Decree	73
3.	Special Conditions	74
4.	General Conditions of the Contract	75
5.	Specifications	76
6.	Contract Drawings	77
7.	General Instructions to Bidders	78
8.	Bid Form	79
9.	Health & Safety Plan	80
10.	This Instrument	81

IN WITNESS WHEREOF, the parties hereto have signed this Agreement in triplicate. One counterpart each has been delivered to GROUP, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf. 84

This Agreement will be effective on _____, 19___ 86

GROUP

Marion Bragg P.P.P. Group

By _____

Attest _____

Address for giving notices

C/O de maximis Inc.

9041 Executive Park Drive, Suite 601

Knoxville, TN 37923

Attn: Michael A. Miller

CONTRACTOR

_____

By _____

[CORPORATE SEAL]

Attest _____

Address for giving notices

_____

_____

License No. _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____

hereinafter called Principal, and

_____

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Marion Bragg P.R.P. Group,

hereinafter called GROUP, in the penal sum of _____

_____ Dollars, ($_____)
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with GROUP, dated the _____day of_____, 19___, for the construction of:

Marion Bragg Landfill Closure.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such Contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to WORK to be performed thereunder or the Contract Documents accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the WORK or to the Contract Documents.

PROVIDED, FURTHER, that no final settlement between GROUP and CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of which shall be deemed an original, this the _____ day of _____ 19__.

(SEAL)

_____
Principal

By _____(s)

ATTEST: _____

(SEAL)

_____
Surety

By _____(s)

ATTEST: _____

Approved as to form:

_____
Attorney for GROUP

IMPORTANT - Surety companies executing bonds must hold certificates of authority as acceptable sureties and be authorized to transact business in the State of Indiana.

FAITHFUL PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____

hereinafter called Principal, and

_____

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

Marion Bragg Landfill P.R.P. GROUP,

hereinafter called GROUP, in the penal sum of _____

_____ Dollars, ($_____)
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with GROUP, dated the _____day of_____, 19___, for the construction of:

Marion Bragg Landfill Closure.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, convenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by GROUP, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully idemnify and save harmless GROUP from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay GROUP all outlay and expense which GROUP may incur in making good any defualt, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to WORK to be performed thereunder or the Contract Documents accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the WORK or to the Contract Documents.

PROVIDED, FURTHER, that no final settlement between GROUP and CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of which shall be deemed an original, this the _____ day of _____ 19___.

(SEAL) _____ Principal _____

By _____ (s)

ATTEST: _____

(SEAL) _____ Surety _____

By _____ (s)

ATTEST: _____

Approved as to form:

_____ Attorney for GROUP _____

IMPORTANT - Surety companies executing bonds must hold certificates of authority as acceptable sureties and be authorized to transact business in the State of Indiana.

NOTICE OF AWARD

Dated _____, 19___

TO: _____

PROJECT: Marion Bragg Landfill Closure

You are notified that your Bid dated _____, 19___ for the above Contract has been considered. You are the apparent successful bidder and have been awarded the Contract.

The Contract Price of your Contract is $_____.

Three copies of the proposed Contract Document (except Drawings) accompany this Notice of Award. Three sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award.

1. You must deliver to the GROUP three fully executed counterparts of the Agreement including all the Contract Documents. This includes the triplicate sets of Drawings. Each of the Contract Documents must bear your signature on the cover page.

2. You must deliver the executed Agreement and the Contract Security (Bonds) and insurance as specified in the Instructions to Bidders and the General Conditions.

Failure to comply with these conditions within the time specified will entitle GROUP to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited.

Within ten days after you comply with those conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

Marion Bragg P.R.P. Group

By _____

Title _____

NOTICE TC PROCEED

Dated _____, 19___

TO: _____

PROJECT: Marion Bragg Landfill Closure

You are notified tht the Contract Time under the above Contract will commence to run on _____, 19___. By that date you are to start performing the Work and your other obligations under the Contract Documents. The date of Final Completion is set forth in the Agreement; it is _____, 19___.

Marion Bragg P.R.P. Group

By _____

Title _____

CONDITIONS OF CONTRACT

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FOR
GENERAL CONDITIONS OF THE CONTRACT

GENERAL CONDITIONS OF THE CONTRACT

1. DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which are applicable to both the singular and plural thereof:

1.1 "As directed", "as permitted", "reviewed", "acceptable", "approved", or words of similar import mean the direction, requirements, permission, approval, or acceptance of Construction Engineer Representative, unless stated otherwise.

1.2 "As shown", "as indicated", "as detailed", or words of similar import refer to the Drawings unless stated otherwise.

1.3 "Addenda" -- Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Contract Documents.

1.4 "Agreement" -- The written agreement between GROUP and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.5 "Application for Payment" -- The Periodical Estimate for Partial Payment Form which is to be used by Contractor in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents. Preprinted forms published by the Engineers Joint Contract Documents Committee, the American Institute of Architects, or other forms accepted by Construction Engineer Representative may be used.

1.6 "Bid" -- The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.7 "Bonds" -- Bid, Faithful Performance, and Payment Bonds and other instruments of security.

1.8 "Change Order" -- A written order to Contractor signed by GROUP authorizing an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time, issued on or after the effective date of the Agreement.

1.9 "Consent Decree" -- Consent Decree between the United States of America and Settling Defendents and is referenced to in the Contract Documents as Volumn IV.

1.10 "Construction Engineer Representative" -- The authorized project site representative of the GROUP who is assigned to the site or any part thereof to observe the performance of the Work.

1.11 "Contract Documents" -- The Notice to Bidders, Instructions to Bidders, the Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award), the Bonds, these General Conditions, Special Conditions, the Specifications, Appendix, the Drawings, together with all modifications issued after the execution of the Agreement, Health and Safety Plan, Consent Decree.

1.12 "Contract Price" -- The money payable by GROUP to Contractor under the Contract Documents as stated in the Agreement (subject to the approximate quantities provisions in the Instructions to Bidders in the case of Unit Price Work).

1.13 "Contract Time" -- The number of days or the date stated in the Agreement for the completion of the Work.

1.14 "Contractor" -- The person, firm, or corporation with whom GROUP has entered into the Agreement.

1.15 "day" -- A calendar day of twenty-four hours measured from midnight to the next midnight.

1.16 "Defective" -- An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty, or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to Construction Engineer Representative's recommendation of final payment.

1.17 "Design Engineer" -- The firm of Perland Environmental Technologies, Burlington, MA.

1.18 "Drawings, Plans or Contract Drawings" -- The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents as Volume II.

1.19 "Effective Date of the Agreement" -- The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.20 "Engineer" -- The firm of de maximis, Environmental Project Management, Knoxville, TN, acting through its authorized representatives.

1.21 "Facility" -- The Marion Bragg landfill site as described in the Consent Decree.

1.22 "Field Order" -- A written order issued by Construction Engineer Representative which orders minor changes in the Work but which does not involve a change in the Contract Price or the Contract Time.

1.23 "Final acceptance" -- The date when the construction of the project is complete in accordance with the Contract Documents so that the entire project can be utilized for the purposes for which it is intended and all monies due Contractor have been paid him in the final Application for Payment.

1.24 "General Requirements" -- Sections of Division 1 of the Specifications.

1.25 "GROUP" -- The Marion Bragg P.R.P. Group

1.26 "Health and Safety Plan" -- Plan prepared by Environmental Resources Management, Inc. and is referenced to in the Contract Documents as Volume III.

1.27 "Inspector or Assistant Inspector" -- The engineering or technical inspector duly authorized or appointed by Engineer or by GROUP, limited to the particular duties entrusted to him. Performs inspection under supervision of Construction Engineer Representative.

1.28 "Modification" -- (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may only be issued after the effective date of the Agreement.

1.29 "Notice of Award" -- The written notice by GROUP to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, GROUP will sign and deliver the Agreement.

1.30 "Notice to Proceed" -- A written notice given by GROUP to Contractor fixing the date on which the Contract Time will

commence to run and on which Contractor shall start to perform
38 Contractor's obligation under the Contract Documents.

1.31 "Project" -- The total construction of which the Work to be provided under the Contract Documents may be the whole or a
40 part, as indicated elsewhere in the Contract Documents.

1.32 "Provide" -- As used in the Specifications means furnish
41 and install.

1.33 "Shop Drawings" -- All drawings, diagrams, illustrations, schedules, and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other information prepared by a supplier and submitted by Contractor to illus-
42 trate material or equipment for some portion of the Work.

1.34 "Site" -- The Marion Bragg landfill site as shown on the Plans and described in the Contract Documents, and any borrow pits or other areas used by the Contractor in relation to the
43 Work.

1.35 "Specifications" -- Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details
44 applicable thereto.

1.36 "Subcontractor" -- An individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the work at the
45 site.

1.37 "Substantial Completion" -- The Work (or a specified part thereof) has progressed to the point where, in the opinion of Construction Engineer Representative as evidenced by his definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purpose for which it was intended; or if there be no such certificate issued, when final payment is due. The terms "substantially complete" and "substantially completed" as
46 applied to any Work refer to Substantial Completion thereof.

1.38 "Supplier" -- A manufacturer, fabricator, supplier, dis-
47 tributor, materialman, or vendor.

1.39 "Work" -- The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction, all as
48 required by the Contract Documents.

2. CONTRACT DOCUMENTS

2.1 General

The Contract Documents comprise the following general classifications of documents, including all additions, deletions, and modifications incorporated therein before the execution of the Agreement.

Bidding Documents

Contractual Documents

Conditions of the Contract

Specifications

Drawings

Health & Safety Plan

Consent Decree

2.2 Bidding Documents

The Bidding Documents issued by GROUP to assist bidders in preparing their bids include:

2.2.1 Invitation to Bid bound herewith.

2.2.2 Instructions to Bidders bound herewith.

2.2.3 The Bid which is the offer of a bidder to perform the work described in the Contract Documents, made out and submitted on the prescribed Bid Form bound herewith, properly signed and guaranteed.

2.2.4 Any Addenda issued during the time of bidding, or forming a part of the Contract Documents used by the bidder for the preparation of his Bid, shall be covered in the bid, and shall be made a part of the Contract. Receipt of each Addendum shall be acknowledged in the Bid.

2.3 Contractual Documents

2.3.1 Agreement

The Agreement covers the performance of the work described in the Contract Documents, including all supplemental Addenda thereto and all general and special provisions pertaining to the work or materials therefor. The Agreement form is bound herewith.

2.3.2 Bonds

Contractor shall, at the time of his execution of the Agreement, furnish bonds payable to GROUP in the form of bonds set forth herein, secured by a surety company acceptable to GROUP, as follows:

2.3.2.1 Payment Bond in an amount equal to 100 percent of the total Contract Amount for the payment of all persons, companies, or corporations who perform labor upon or furnish material to be used in the work under this Contract.

2.3.2.2 Faithful Performance Bond in an amount equal to 100 percent of the total Contract Amount, conditioned upon the faithful performance of all covenants and stipu-

lations under the Contract and holding good for a period of one year after the final acceptance of the work to protect GROUP against the results of defective materials, workmanship, and equipment during that time.

2.3.2.3 It is the responsibility of Contractor to notify all surety companies and other signers of any of the bonds listed above, to familiarize themselves with all of the conditions and provisions of this Contract. All surety companies and other signers shall waive their right of notification by GROUP of any change or modification of this Contract, or of decreased or increased work, or of the cancellation of this Contract, or of any other acts by GROUP or its authorized employees or agents under the terms of this Contract. The waiver by the surety companies and other signers shall in no way relieve the surety companies and other signers of their obligations under this Contract.

2.4 Conditions Of The Contract

General Conditions of the Contract and Special Conditions bound herewith.

2.5 Specifications And Drawings

2.5.1 Specifications bound herewith, which are listed in the Table of Contents for these Contract Documents.

2.5.2 Contract Drawings including to those listed in Volume II of the Contract Documents.

2.6 Discrepancies

Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to Construction Engineer Representative, who shall promptly correct such inconsistencies or ambiguities in writing. Any work done by Contractor after such findings, until authorized, will be done at Contractor's risk.

2.7 Interpretation Of Specifications And Drawings

The Specifications and the Contract Drawings are intended to be explanatory of each other. Any work indicated on the Drawings and not in the Specifications, or vice versa, is to be executed as if indicated in both. In the event of any doubt or question arising respecting the true meaning of the Specifications or Drawings, reference shall be made to Construction Engineer Representative and his decision thereon shall be final.

2.8 Dimensions

Finished surfaces in all cases shall conform with the lines, grades, cross-sections, and dimensions shown on the Drawings. Deviations from the Drawings, as may be required by the exigencies of construction, will in all cases be determined by Construction Engineer Representative and authorized in writing by Construction Engineer Representative or GROUP. If additional dimensions are required, they shall be requested from Construction Engineer Representative.

2.9 Titles And Headings

2.9.1 The titles and subheadings printed on the Drawings, in the General Conditions, in the Specifications, and elsewhere in the Contract Documents are inserted for the convenience of reference only, and shall not be taken or considered as having any bearing on the interpretation thereof.

2.9.2 Separation of the Specifications into Divisions and Sections shall not operate to make Construction Engineer Representative an arbiter to establish limits of work between Contractor and subcontractors, or between trades.

2.10 Additional Drawings And Instructions

2.10.1 The Drawings and Specifications are intended to be comprehensive and to indicate in more or less detail the scope of the Work. Should it appear that the Work to be done, or any of the matters relative thereto, is not sufficiently detailed or explained in these Contract Documents, including the Drawings, Contractor shall apply to Construction Engineer Representative for such further explanations as may be necessary and shall conform thereto as part of this Contract, so far as may be consistent with the terms of the Contract.

2.10.2 In addition to these explanations Construction Engineer Representative may furnish additional drawings and instructions from time to time during the progress of the Work to clarify or to define in greater detail the intent of the Specifications and Drawings, and Contractor shall make his work conform to all such additional drawings and instructions.

2.11 Copies Furnished

2.11.1 GROUP will furnish to Contractor, free of charge, three copies of the Contract Documents.

2.11.2 Additional sets desired will be furnished at printing cost, based upon commercial printing rates.

3. GROUP-CONTRACTOR-ENGINEER RELATIONS

3.1 Rights-Of-Way

3.1.1 GROUP will provide all rights-of-way and easements for the work to be constructed by Contractor under this Contract.

3.1.2 Construction Engineer Representative will establish the two baselines indicated on the Drawings, plus one elevation reference point adjacent to the work. This information will be provided once at the beginning of the project.

3.2 Suspension Of Work

GROUP may at any time suspend the Work, or any part thereof, by giving reasonable notice to Contractor. The Work shall be resumed by Contractor on the date fixed in a written notice from GROUP to Contractor. If suspension of the Work is due to no fault of Contractor and not otherwise authorized by other provisions of the Contract Documents, GROUP will reimburse Contractor for such expense, if any, which is incurred by Contractor in connection with the work under this Contract as a result of such suspension which would not have been incurred or reasonably required if there had not been such suspension; provided that there shall be no reimbursement if the period of suspension occurs after expiration of the time allowed for completion of the Work, exclusive of any extension of time because of avoidable delays.

3.3 Right Of GROUP and EPA To Terminate Agreement

3.3.1 GROUP and U.S. EPA have the right to terminate his Agreement with Contractor after giving five days written notice of termination to Contractor in the event of any default by Contractor.

3.3.2 It shall be considered a default by Contractor whenever he shall:

3.3.2.1 Declare bankruptcy, become insolvent, or assign his assets for the benefit of his creditors.

3.3.2.2 Disregard or violate provisions of Federal Regulations or the Contract Documents or fail to prosecute the Work according to the agreed schedule of completion, including extensions thereof.

3.3.2.3 Fail to provide a qualified superintendent, competent workmen or subcontractors, or proper materials, or fail to make prompt payment therefor.

3.3.3 In the event of termination of the Agreement by GROUP or EPA because of default by Contractor, GROUP may take possession of the Work and of all materials and equipment thereon and may finish the work by whatever method and means he may select.

3.4 Emergency Protection

3.4.1 In case of an emergency which threatens loss, damage, or injury to persons or property and which requires immediate action to remedy, in the absence of Contractor's personnel, then and in that event, GROUP, with or without notice to Contractor or his surety, may provide suitable protection to the said property and persons by causing such work to be done and such material to be furnished as shall provide such protection as GROUP may consider necessary and adequate. The cost and expense of such work and material so

furnished shall be borne by Contractor and if the same shall not be paid on presentation of the bills therefor, then such costs shall be deducted from any amounts due or to become due Contractor.

3.4.2 The performance of such emergency work under the direction of GROUP shall in no way relieve Contractor from any damages which may occur during or after such precaution has been taken by GROUP.

3.5 Office Of Contractor At Site

During the performance of this Contract Contractor shall maintain a suitable office at the site of the Work which shall be the headquarters of the foreman or superintendent authorized to receive drawings, instructions, or other communications, articles, or things from GROUP or its agents; and any such thing given to the said foreman or superintendent or delivered to Contractor's office at the site of the work in his absence shall be deemed to have been given to Contractor. Contractor shall have a telephone installed in this office.

3.6 Attention To Work

Contractor shall supervise the Work to the end that it shall be prosecuted faithfully, and he shall at all times be represented by a competent superintendent or foreman who shall be present at the Work and who shall receive and obey all instructions or orders given under this Contract; and who shall have full authority to execute the same, and to supply materials, tools, and labor without delay; and who shall be the legal representative of Contractor. Contractor shall be liable for the faithful observance of any instructions delivered to him or to his authorized representative.

3.7 Protection Of Contractor's Work And Property

3.7.1 Contractor shall protect his work, supplies, and materials from damage due to the nature of the Work, the action of the elements, trespassers, or any cause whatsoever, until the completion and acceptance of the Work.

3.7.2 Neither GROUP nor any of its officers, employees, or agents assumes any responsibility for collecting indemnity from any persons or person causing damage to the work of Contractor.

3.8 Surveys

3.8.1 Contractor shall develop and make all detail surveys needed for construction working points, lines, and elevations.

3.8.2 Contractor shall carefully preserve all bench marks, reference points, and stakes established by Construction Engineer Representative and in case he causes damage or disturbance, he will replace the same at no cost to the GROUP, and shall be responsible for any mistakes that may be caused by their loss.

3.9 Subcontractors

No subcontractor will be recognized as an agent or authorized representative of Contractor. All persons engaged in the work of construction will be considered as employees of Contractor and Contractor will be held responsible for their work and supervision. All work performed by a subcontractor shall be subject to the provisions of the Contract.

128 3.10 Liability Of Contractor

3.10.1 The mention of any specific duty or liability imposed upon Contractor shall not be construed as a limitation or restriction of any general or other liability or duty imposed upon Contractor by this Contract, said reference to any specific duty or liability being made merely for
129 the purpose of explanation.

3.10.2 Contractor shall be responsible to GROUP for the acts and omissions of all his employees and all subcontractors, their agents and employees, and all other persons per-
130 forming any of the Work under an agreement with Contractor.

131 3.11 Assumption Of Risks

Until the completion and final acceptance by GROUP of all of the Work under or implied by this Contract, the Work, except those portions which are under beneficial use by GROUP, shall be under Contractor's care and charge and he shall be responsible therefor. Contractor shall rebuild, replace, repair, restore, and make good all injuries, damages, re-erection, and repairs occasioned or rendered necessary by causes of any nature whatsoever, to all or any por-
132 tions of the Work, except as otherwise stipulated.

133 3.12 Responsibility For Damage

3.12.1 Contractor shall assume the defense of, and indemnify and save harmless GROUP and each and every officer, employee, and agent thereof, Engineer, Design Engineer, and Construction Engineer Representative, from any and all loss, liability, or damage and from all suits, actions, damages, or claims of every name and description, to which GROUP or any of its officers, employees, or agents, or Engineer, Design Engineer, and Construction Engineer Representative, may incur or be subjected or put by reason of injury to persons or property in the execution of the Work or resulting from negligence or carelessness on the part of Contractor, his employees, subcontractor, or agents, in the delivery of materials and supplies; or by or on account of any act or omission of Contractor, his employees, subcontractors, or agents, including, but not limited to, any failure to fulfill the terms of or comply with all laws and regulations which apply to this Contract; and said GROUP shall have the right to estimate the amount of such damage and pay the same, and the amount so paid for such damage shall be deducted from the money due Contractor under this Contract, or the whole or so much of the money due or to become due Contractor under this Contract, as may be considered necessary by GROUP, shall be retained by GROUP until such suits or claims for damages shall have been settled or otherwise disposed of, and satisfactory evidence to that effect fur-
134 nished to GROUP.

3.12.2 The rights of GROUP under this Contract in control of the quality and completeness of the work shall not make Contractor an agent of GROUP, and the liability of Contractor for all damages to persons or to public or private property, arising from Contractor's execution of the Work, shall not be lessened because of the existence, exercise, or
135 nonexercise of such rights.

136 3.13 Acceptance Of Contractor's Plans

The acceptance by Construction Engineer Representative of any drawing or any method of work proposed by Contractor shall not relieve Contractor of any of his responsibility for any errors therein and shall not be regarded as any assumption of risk or liability by GROUP or any officer or employee thereof; and Contractor shall have no claim under

the Contract on account of the failure or partial failure or inefficiency of any plan or method so accepted. Such acceptance shall be considered to mean merely that Construction Engineer Representative has no objection to Contractor's using, upon his own full responsibility, the plans or method proposed.

3.14 Suggestions To Contractor

Any plan or method of work suggested by Construction Engineer Representative to Contractor, but not specified or required, if adopted or followed by Contractor in whole or in part, shall be used at the risk and responsibility of Contractor, and Engineer and GROUP shall assume no responsibility therefor.

3.15 Cooperation With GROUP And Other Contractors

Any difference or conflict which may arise between Contractor and other contractors who may be performing work in behalf of GROUP, or between Contractor and workmen of GROUP in regard to their work shall be adjusted and determined by Construction Engineer Representative. If the work of Contractor is delayed because of any acts or omissions of any other contractor of GROUP, Contractor shall on that account have no claim against GROUP other than for an extension of time.

3.16 Construction Engineer Representative

GROUP will furnish a Construction Engineer Representative to observe the performance of the Work. The duties, responsibilities, and limitations of authority of the Construction Engineer Representative and Inspectors will be as defined in these General Conditions.

3.17 Authority Of The Construction Engineer Representative

All work done under this Contract shall be done in accordance with the Contract Documents and in a good workmanlike manner. To prevent disputes and litigation, Construction Engineer Representative shall in all cases determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this Contract. Construction Engineer Representative shall decide all questions relative to the true construction, meaning, and intent of the Specifications and the Drawings; shall decide all questions which may arise relative to the classifications and measurements of quantities and materials and the fulfillment of this Contract; and shall have the power to reject work or material which does not conform to the terms of this Contract. His estimate and decision in all matters shall be a condition precedent to an appeal to GROUP, or the right of Contractor to receive, demand, or claim any money or other compensation under this Contract and a condition precedent to any liability on the part of GROUP to Contractor on account of this Contract. Whenever Construction Engineer Representative shall be unable to act, in consequence of absence or any other cause, then such person as Construction Engineer Representative or GROUP shall designate shall perform any and all of the duties and be vested with any or all of the powers herein given to Construction Engineer Representative.

148 3.18 Inspection

Properly authorized and accredited inspectors shall be considered to be the representatives of GROUP limited to the duties and power entrusted to them. It will be their duty to inspect materials and workmanship of those portions of the work to which they are assigned, either individually or collectively, under instructions of Construction Engineer Representative and to report any and all deviations from the Drawings, Specifications, and other Contract provisions which may come to their notice. The GROUP shall have the right to order a portion or all of the work to which an Inspector is assigned stopped if, in the GROUP'S judgement, such action is necessary to allow proper inspection, avoid irreparable damage to the work, or avoid subsequent rejection of work which could not be readily replaced or restored to an acceptable condition. Such stoppage shall be for a period reasonably necessary for GROUP to determine that the work will in fact proceed in due fulfillment of all contract
149 requirements.

150 3.19 Observation Of Completed Work

3.19.1 If any work is covered up without being inspected by Construction Engineer Representative, it must, if required by Construction Engineer Representative in writing, be uncovered for examination and properly restored at Con-
151 tractor's expense.

3.19.2 Re-examination of any work may be ordered by Construction Engineer Representative, and if so ordered in writing Contractor shall remove or uncover such portions of the completed work as may be directed by Construction Engineer Representative at any time before acceptance of the work. After examination, Contractor shall restore the work to the standard required by the Contract Documents. Should the work thus exposed or examined prove acceptable, the uncovering or removing and the restoring of the work shall be paid for as extra work but, should the work exposed or examined prove unacceptable, the uncovering, removing, and
152 restoring of the work shall be at Contractor's expense.

4. MATERIALS, EQUIPMENT, AND WORKMANSHIP

4.1 General Quality Of Materials

Materials and equipment shall be new and of a quality equal to that specified.

4.2 Quality In Absence Of Detailed Specifications

Whenever under this Contract it is provided that Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration, in either situation, of the use to which they are to be put. In general, the work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the Work as a whole or in part.

4.3 Materials And Equipment Specified By Name

Any material or equipment indicated or specified by brand or trade name may also list at least one additional brand or trade name of comparable quality or utility followed by the words "or equal", except for those items of material or equipment which may be required by the Specifications to match others in use in an existing facility. Contractor may offer any material or equipment which shall be equal in every respect to that specified, but written acceptance of such equipment or material shall be obtained from Construction Engineer Representative or GROUP. The decision of Construction Engineer Representative or GROUP shall be final.

4.4 Approval Of Materials And Equipment

All materials and equipment offered to be furnished or furnished for the work are subject to inspection and approval or rejection by Construction Engineer Representative. Insofar as practicable, approval shall be obtained prior to purchase and delivery of materials and equipment to the site of the work.

4.5 Removal Of Rejected Materials, Structures, and Work

4.5.1 Contractor shall remove from the site of the work, without delay, all rejected materials, structures, or work of any kind brought to or incorporated in the Work, and upon his failure to do so, or to make satisfactory progress in so doing within two working days after the service of a written notice from Construction Engineer Representative, the rejected material or work may be removed by GROUP and the cost of such removal shall be taken out of the money that may be due or may become due Contractor on account of or by virtue of this Contract. No such rejected material shall again be offered for use by Contractor under this Contract.

4.5.2 Rejected materials and equipment that may become contaminated by the hazardous substances on site may require decontamination or disposal at an approved hazardous waste site. All cost associated with disposal of rejected materials will be the responsibility of the Contractor.

166 4.6 Sunday, Holiday, And Night Work

No work shall be done between the hours of six o'clock PM and seven o'clock AM, nor on Saturdays, Sundays or legal holidays, except such work as is necessary for the proper care and protection of work already performed or except in case of emergency and, in any case, only with the permission of Construction Engineer Representative. It is understood, however, that night or Saturday work may be established as a regular procedure by Contractor if he first obtains the written permission of Construction Engineer Representative, and that such permission may be revoked at any time by Construction Engineer Representative if Contractor fails to maintain at night adequate force and equipment for reason-
167 able prosecution and to justify inspection of the work.

168 4.7 Records Of Employees

Contractor and each subcontractor shall keep an accurate record showing the name, place of residence, occupation, per diem pay, and actual hours worked each day and each calendar week by each person employed in connection with the Work. The records shall be available at any time to Construction Engineer Representative or his duly authorized
169 representative.

170 4.8 Final Guarantee

4.8.1 All Work shall be guaranteed by Contractor for a period of one year from and after the date of acceptance of
171 the work by GROUP.

4.8.2 If, within the guarantee period, repairs or changes are required in connection with guaranteed work which, in the opinion of Construction Engineer Representative, is rendered necessary as the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, Contractor shall, promptly upon receipt of notice from GROUP and
172 without expense to GROUP, do the following:

4.8.2.1 Place in satisfactory condition in every particular all of such guaranteed work and correct all defects
173 therein.

4.8.2.2 Make good all damage to the site, or equipment which, in the opinion of Construction Engineer Representative, is the result of the use of materials, equipment, or workmanship which are inferior, defective, or not in
174 accordance with the terms of the Contract.

4.8.2.3 Make good any work or material or site disturbed
175 in fulfilling any such guarantee.

4.8.2.4 Submit a work schedule showing the dates of
176 starting and completing the repair work.

4.8.3 If Contractor, after notice, fails within 10 days to proceed to comply with the terms of this guarantee, GROUP may have the defects corrected, and Contractor and his surety shall be liable for all expense incurred; provided, however, that in case of an emergency where, in the opinion of GROUP, delay would cause loss or damage, repairs may be started without notice being given to Contractor and Con-
177 tractor shall pay the cost thereof.

4.8.4 If minor repairs are made by GROUP without notice to Contractor, or if GROUP personnel are used to assist Contractor or an equipment supplier in making repairs to defective work, Contractor will be billed for and shall pay the costs of the minor repairs and the costs associated with the
178 use of GROUP personnel.

4.8.5 All special guarantees or warrantees applicable to specific parts of the Work as may be stipulated in the Specifications or other papers forming a part of this Contract shall be subject to the terms of this paragraph during the first year of the life of each such guarantee. All special guarantees and manufacturers' warrantees shall be assembled by Contractor and delivered to Construction Engineer Representative, along with a summary list thereof, before the acceptance of the Work. 179

181 5. INSURANCE, LEGAL RESPONSIBILITY, AND SAFETY

182 5.1 Insurance

Contractor shall take out, pay for, and maintain throughout the duration of, and specifically for, this Con-
183 tract the following insurance coverage.

184 5.1.1 Public Liability And Property Damage Insurance

185 5.1.1.1 For Contractor

This insurance shall protect Contractor from claims for bodily injury and property damage (except automotive equipment) which may arise because of the nature of the Work or from operations under this Con-
186 tract.

187 5.1.1.2 For GROUP And Engineer

This separate policy of insurance shall name GROUP, Design Engineer, Engineer, and Construction Engineer Representative, their partners, officers, agents and employees as insureds. The original insurance policy shall be submitted for retention by GROUP along with a copy for Engineer. This separate policy shall provide coverage to said GROUP, Engineer, Design Engineer, Construction Engineer Representative, and their partners, officers, agents, and employees with respect to said Work. Both bodily injury and property damage insurance must be on an occurrence basis, and said policy shall provide that the coverage afforded thereby shall be primary coverage to the full limit of liability stated in the declarations, and if said GROUP, Engineer, Design Engineer, and Construction Engineer Representative and their partners, officers, agents and employees have other insurance against the loss covered by said policy, that other insurance shall be excess insurance only. No exclusions shall be permitted by endorsement with the exception of prepa-
ration or approval of maps and plans, opinions,
188 reports, surveys, designs, or specifications.

189 5.1.1.3 Amount of Coverage

Each of the above public liability and property damage policies of insurance shall provide coverage in the following minimum limits of liability: For bodily injury $300,000 each occurrence; property damage, $300,000 on account of any one occurrence with an
190 aggregate limit of not less than $1,000,000.

191 5.1.1.4 Subcontractors

The public liability and property damage insurance shall not be deemed to require Contractor to have his subcontractors named as co-insureds in his policy of public liability and property damage, but the policy shall protect him from contingent liability which may arise from operations of his subcontractors. Also, Contractor shall secure certificates of insurance as evidence that each subcontractor carries insurance to provide coverage under this Contract to the same limits as is required by Contractor. Contractor shall submit copies of his subcontractors insurance certifi-
cates to GROUP and Engineer as evidence of insurance
192 coverage.

193 5.1.1.5 Included Coverage

The above public liability and property damage
194 insurance shall also include the following coverages:

Premises - Operations - Escalators. 195

Contractor's protective (subcontractors to Contractor). 6

Products - Completed Operations. 197

Personal Injury (false arrest, libel, wrongful eviction, etc.). 198

Broad Form Property Damage. 199

XCU (explosion, collapse, underground damage). Exclusions deleted when applicable to operations performed by Contractor or his subcontractors. 200

Contractor Liability with respect to the hold harmless agreement as herein stated. 201

5.1.1.6 Comprehensive Automobile Liability 202

This insurance shall cover owned, hired, and other non-owned automobiles as shall protect Contractor from claims for bodily injury or property damage which may arise from the use of motor vehicles engaged in various operations under this Contract. The automobile insurance shall provide minimum limits of liability for bodily injury of $1,000,000 for each person and $1,000,000 each occurrence, and $1,000,000 of property damage each occurrence. 203

5.1.1.7 Contractors Pollution Liability 204

Contractors Pollution Liability insurance shall protect the United States, GROUP, Engineer, Design Engineer and Construction Engineer Representative and the public against the Contractor and other agent's acts or omissions in the performance of the Work at the Facility, with respect to claims for personal injury, property damage or natural resource damage resulting from sudden or non-sudden accidental releases of hazardous substances, pollutants or contaminants at and from the Facility. The minimum limits of coverage shall be $1,000,000 per occurrence, and $2,000,000 aggregate. 205

5.1.1.8 Umbrella Policy 206

At the option of Contractor, primary limits may be less than required, with an umbrella policy providing the additional limits needed. This form of insurance will be acceptable provided that the primary and umbrella policies both provide the insurance coverages herein required, and further provided that the umbrella policy minimum limits of coverage are $1,000,000 per occurrence and $2,000,000 aggregate. The umbrella coverage shall not apply to GROUP's and Engineer's protective policy. 207

5.1.2 Workman's Compensation Insurance. 208

Before beginning the work, Contractor shall furnish to GROUP satisfactory proof that he has taken out, for the period covered by the Work under this Contract, full workmen's compensation insurance for all persons whom he may employ in carrying out the Work contemplated under this Contract. In the event that the Work of this Contract falls within the jurisdiction of the United States Longshoremans and Harbor Workers Compensation Act and liability under Admiralty and Railroad Employees Federal Liability Act, Contractor shall extend his workmen's compensation insurance to provide and maintain in full force aid effect during the period covered by this Contract insurance coverage under one or both of these Acts. 209

5.1.3 Workman's Occupational Diseases Insurance

Workman's occupational diseases insurance shall be taken out covering all persons whom Contractor may employ in carrying out the Work contemplated under this Contract.

5.1.4 Builder's Risk Insurance.

5.1.4.1 "All Risk" builder's risk insurance, in an amount equal to the Contract Price, shall cover, but shall not be limited to, fire, lightning, windstorm, hail, explosion, riot, riot attending a strike, civil commotion, smoke damage, damage by aircraft or vehicles, vandalism and malicious mischief, theft, collapse, flood, and earthquake. This insurance shall name GROUP and Contractor as insureds and shall include coverage, but not by way of limitation, for all damage or loss to the Work and to appurtenances, to materials and equipment to be used on the project while same are in transit, or stored on or off the project site, and to construction plant and temporary structures.

5.1.4.2 The policy shall provide GROUP the right to occupy the premises without termination of the policy until the final acceptance of the project. Copies of this policy shall be submitted to GROUP.

5.1.5 Flood Insurance

A flood insurance policy, in an amount equal to the contract price, shall cover, but not be limited to damage to completed work, work in progress, loss of or damage to structures and contents, and loss of or damage to materials and equipment stored on site. This policy shall provide coverage to the Contractor, the GROUP, and the Construction Engineer Representative with respect to the Work.

5.2 Certificate Of Insurance

Contractor shall, at the time of execution of his Contract, file with GROUP a certificate of insurance and copies of the policies covering all his insurance as required herein, and the policy or policies of insurance covering said GROUP, Engineer, and their partners, officers, agents, and employees. Contractor shall submit an approved form of certificate of insurance providing the coverages herein required. Each such policy and certificate shall be satisfactory to GROUP and shall bear an endorsement precluding cancellation, reduction, or change in coverage without giving GROUP at least 30 days prior notice thereof in writing. Nothing contained in the insurance requirements shall be construed as limiting the extent of Contractor's responsibility for payment of damages resulting from his operations under this Contract.

5.3 Notification Of Insurance Companies

It is the responsibility of Contractor to notify all insurances companies to familiarize themselves with all of the conditions and provisions of this Contract. The insurance companies shall waive their right of notification by GROUP of any change or modification of this Contract, or of decreased or increased work, or of the cancellation of this Contract, or of any other acts by GROUP or its authorized employees or agents under the terms of this Contract. The waiver by the insurance companies shall in no way relieve the insurance companies of their obligations under this Contract.

5.4 Hold Harmless Agreement 221

Contractor shall indemnify and save harmless GROUP, Engineer, Design Engineer, and Construction Engineer Representative, and all of their partners, officers, agents, and employees from all suits, actions, or claims of any character brought for or on account of any injuries to or death of or damages received by any person, persons, or property resulting from the operations of Contractor or any of his subcontractors in prosecuting the Work under this Contract, except only such damage, injury, or death as shall have been occasioned by the sole negligence of GROUP or Engineer. 222

5.5 Injury Or Illness Reports 223

Contractor shall file with Construction Engineer Representative three copies of employer's first report of injury or illness immediately following any incident requiring the filing of said report during the prosecution of the work under this Contract. Contractor shall also furnish to Construction Engineer Representative three copies of the employer's first report of injury or illness involving any subcontractor on this project. 224

5.6 Patents 225

5.6.1 Except as otherwise provided in these Contract Documents, Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the Work, and agrees to indemnify and save harmless GROUP, Engineer, Design Engineer and Construction Engineer Representative, and their duly authorized representatives or employees, from all suits at law, or actions of every nature for, or on account of the use of, any patented materials, equipment, devices, or processes. 6

5.6.2 Should Contractor, his agents, servants, or employees, or any of them, be enjoined from furnishing or using any invention, article, material, or appliance supplied or required to be supplied or used under this Contract, Contractor shall promptly offer other articles, materials, or appliances in lieu thereof, of equal efficiency, quality, finish, suitability, and market value, for review by Construction Engineer Representative. If Construction Engineer Representative should disapprove the offered substitutes and should elect, in lieu of a substitution, to have supplied, and to retain and use, any such invention, article, material, or appliance as may by this Contract be required to be supplied, Contractor shall pay such royalties and secure such valid licenses as may be requisite and necessary for GROUP and officers, agents, and employees, or any of them, to use such invention, article, material, or applicance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof. Should Contractor neglect or refuse to make any approved substitution promptly, or to pay such royalties and secure such licenses as may be necessary, then in that event Construction Engineer Representative shall have the right to make such substitution, or GROUP may pay such royalties and secure such licenses and charge the cost thereof against any money due Contractor from GROUP, or recover the amount thereof from him and his sureties notwithstanding that final payment under this Contract may have been made. 227

5.6.3 Except as otherwise provided in these Contract Documents, Contractor shall pay all such royalties or other monies required to be paid as aforesaid. 228

229 5.7 Laws To Be Observed

Contractor shall keep himself fully informed of all existing and future federal, state, county, and municipal laws, ordinances, and regulations which in any manner affect those engaged or employed in the Work or the materials used in the Work or conduct of the Work or the rights, duties, powers, or obligations of GROUP or of Contractor or which otherwise affect the Contract, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. He shall at all times observe and comply with, and shall cause all his agents, subcontractors, and employees to observe and comply with, all such laws, ordinances, regulations, orders, and decrees, and shall protect and indemnify GROUP and all of its officers, agents, and employees, and Engineer, Design Engineer, and Construction Engineer Representative, against any claim, loss, or liability arising or resulting from or based upon the violation of any such law, ordinance, regulation, order, or decree, whether by himself or by his agents, subcontractors, or
230 employees.

231 5.8 Provisions Of Law

It is specifically provided that this Contract is subject to all the provisions of law regulating and controlling the performance of work for GROUP, and that the rules of law shall prevail over any provision contained in any of the Contract Documents which may be in conflict thereto or inconsistent therewith. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein and the Contract Documents shall be read and enforced as though it were included herein, and if, through mistake or otherwise, any such provision is not inserted, or is not correctly inserted, then upon application of either party, the Contract Documents shall forthwith be physically amended to
232 make such insertion or correction.

233 5.9 Deliveries To Contractor

Delivery by GROUP or any of its agents or representatives to Contractor of any drawings, samples, notices, letters, communications, or other things may be made by personal delivery to Contractor; by personal delivery to Contractor's foreman or superintendent at the site of the work; by delivery to Contractor's business address specified in the bid or specified in a written notice of changed address delivered to GROUP; or by delivery to Contractor's office at the site of the work. Delivery to Contractor's above mentioned business address, or to Contractor's office at the site of the work, may be made either by personal delivery to such address or office or by depositing the thing to be delivered in the United States mail, postage prepaid,
234 addressed to such address or office.

235 5.10 Assignment Of Contract

This Contract may not be assigned in whole or in part except upon the written consent of GROUP. Any assignment
236 agreement shall be subject to review and approval by GROUP.

237 5.11 Protection Of Persons And Property

5.11.1 Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. Contractor shall furnish such watchmen, guards, fences, warning signs, lights, and walk-

ways, and shall take all other precautions as shall be necessary to prevent damage to persons or property. All structures and improvements in the vicinity of the Work shall be protected by Contractor, and if such property is damaged, injured, or destroyed by Contractor, his employees, subcontractors, or agents, it shall be restored to a condition as good as when he entered upon the Work. 238

5.11.2 The duty of Construction Engineer Representative to conduct construction inspection of Contractor's performance does not include any review of the adequacy of Contractor's safety measures in, on, or near the construction site or sites. Construction Engineer Representative has not been retained or compensated to provide design and construction review services relating to Contractor's safety precautions or to means, methods, techniques, sequences, or procedures required for Contractor to perform his work. 240

5.12 Liability Of GROUP's Representatives And Officials 241

No official or employee of GROUP, nor Engineer, nor Design Engineer, nor Construction Engineer Representative, nor any authorized assistant or agent of any of them, shall be personally responsible for any liability arising under this Contract. Construction Engineer Representative shall not be responsible for construction means, methods, techniques, sequences and procedures, time of performance, or for safety precautions and programs in connection with construction work. Construction Engineer Representative shall not be responsible for Contractor's failure to carry out the work in accordance with the construction Contract. Construction Engineer Representative shall not be responsible for acts or omissions of Contractor, any subcontractors, or any of their agents or employees, or any other persons performing any of the work. 242

6. PROGRESS AND COMPLETION OF WORK

6.1 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the thirtieth day after the effective date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed; but in no event shall the Contract Time commence to run later than the ninetieth day after the day of Bid opening or the thirtieth day after the effective date of the Agreement. A Notice to Proceed may be given at any time within thirty days after the effective date of the Agreement.

6.2 Notice Of Starting Work

Contractor shall notify GROUP in writing 48 hours before starting work at the site of the work of his intentions to do so. In case of a temporary suspension of work he shall give reasonable notice before resuming work.

6.3 Time Of Completion

Contractor shall promptly begin the work and prosecute the same until the Work under this Contract shall be completed and ready for full use within the time specified in the Agreement.

6.4 Equipment And Methods

The Work under this Contract shall be prosecuted with all materials, tools, machinery, apparatus, and labor, and by such methods as are necessary to the complete execution of everything described, shown, or reasonably implied in the Contract Documents. If at any time before the beginning or during the progress of the work, any part of Contractor's plant or equipment or any of his methods of execution of the work appear to Construction Engineer Representative to be inefficient or inadequate to insure the required quality or rate of progress of the Work, he may request and GROUP may order Contractor to increase or improve his facilities or methods and Contractor shall comply promptly with such orders, but neither compliance with such orders nor failure of GROUP to issue such orders shall relieve Contractor from his obligation to secure the quality of the Work and the rate of progress required. Contractor alone shall be responsible for the safety, adequacy, and efficiency of his equipment and methods.

6.5 Unfavorable Weather And Other Conditions

During unfavorable weather and other unfavorable conditions Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose satisfactory quality or efficiency will be affected by an unfavorable condition shall be constructed while these unfavorable conditions exist unless, by special means or precautions, Contractor shall be able to overcome them.

6.6 Alterations, Deletions And Extra Work

6.6.1 GROUP reserves the right to increase or decrease the quantity of any item or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by GROUP and, also, to make such alterations or deviations, additions to, or deletions from the work or the Drawings and Specifications as may be determined during the progress of the work to be necessary and advisable for the proper com-

pletion thereof. Upon written order of GROUP, Contractor shall proceed with the work as increased, decreased, or altered. Such work shall be considered a part of and subject to all terms and requirements of the Contract Documents.

6.6.2 Construction Engineer Representative is authorized to order, on behalf of GROUP, minor changes in the work which do not involve extra cost to GROUP and which do not change the character of the work. He is not authorized to order any other changes, alterations, deletions, additions, or extra work, unless they are approved in a Change Order properly authorized in writing by GROUP.

6.6.3 No claim of Contractor for extra compensation because of any change, alteration, deletion, addition, or extra work will be paid or be payable unless a written order for such change, alteration, deletion, addition, or extra work is signed by the authorized representative of GROUP. All adjustments, if any, in the Contract Price to be paid to Contractor because of any such change, alteration, deletion, addition, or extra work shall be made only to the extent and in the manner provided under the paragraph, "Payment For Extra Work And Work Deleted" in these General Conditions. Such alterations shall in no way affect, vitiate, or make void this Contract or any part thereof, except that which is necessarily affected by such alterations and is clearly the evident intention of the parties to this Contract.

6.6.4 In case of neglect or refusal by Contractor to perform any extra work which may be authorized by GROUP or to make satisfactory progress in its execution, GROUP may employ any person or persons to perform such work and Contractor shall not in any way interfere with or molest the person or persons so employed.

6.6.5 When any changes decrease the amount of work to be done, such changes shall not constitute a basis or reason for any claim by Contractor for extra compensation or damages on account of any anticipated profits which he thereby loses on the omitted work, and Contractor shall not be entitled to any compensation or damages therefor.

6.7 Delays

6.7.1 Avoidable Delays

6.7.1.1 Avoidable delays in the prosecution or completion of the Work shall include all delays which might have been avoided by the exercise of care, prudence, foresight, or diligence on the part of Contractor.

6.7.1.2 Delays in the prosecution of parts of the work which may in themselves be unavoidable but do not necessarily prevent or delay the prosecution of other parts of the work nor the completion of the whole Work within the time herein specified; reasonable loss of time resulting from the necessity of submitting drawings to Construction Engineer Representative for review and from the making of surveys, measurements, and inspections; and such interruptions as may occur in the prosecution of the work on account of the reasonable interference of other contractors employed by GROUP, which do not necessarily prevent the completion of the whole work within the time herein specified, will be deemed avoidable delays within the meaning of this Contract.

6.7.2 Unavoidable Delays

Unavoidable delays in the prosecution or completion of the Work under this Contract shall include all delays which may result through causes beyond the control of

Contractor and which he could not have provided against by the exercise of care, prudence, foresight, or diligence. Orders issued by GROUP changing the amount of Work to be done, the quantity of material to be furnished, or the manner in which the Work is to be prosecuted; failure of GROUP to provide rights-of-way; and unforeseen delays in the completion of the work of other contractors under contract with GROUP will be considered unavoidable delays, so far as they necessarily interfere with Contractor's completion of the Work. Delays due to adverse weather conditions will not be regarded as unavoidable delays as Contractor should understand that such conditions are to be expected and plan his work accordingly. Unavoidable delays shall not include increased costs or expenses or non attainment of the performance standards of these Specifications. Increased costs alone shall not be considered to be circumstances beyond the control of the Contractor.

6.7.3 Notice Of Delays

6.7.3.1 Whenever Contractor foresees any delay in the prosecution of the Work and, in any event, immediately upon the occurrence of any delay, he shall notify Construction Engineer Representative in writing of the probability of the occurence of such delay and its cause in order that Construction Engineer Representative may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work are to be delayed thereby.

6.7.3.2 After the completion of any part or the whole of the Work, Construction Engineer Representative, in approving the amount due Contractor, will assume that any and all delays which have occurred in its prosecution and completion have been avoidable delays, except such delays as shall have been called to the attention of Construction Engineer Representative at the time of their occurrence and later found by him to have been unavoidable. Contractor shall make no claims that any delay not called to the attention of Construction Engineer Representative at the time of its occurrence has been an unavoidable delay.

6.8 Extension Of Time

6.8.1 For Unavoidable Delays

For delays which are unavoidable, as determined by GROUP, Contractor will be allowed, if he applies for the same, an extension of time beyond the time specified for completion, proportionate to such unavoidable delay or delays, within which to complete the Contract, and Contractor will not be charged, because of any extension of time for such unavoidable delay, any liquidated damages or engineering and inspection costs as are charged in the case of extensions of time for avoidable delays.

6.8.2 For Avoidable Delay

6.8.2.1 If the work called for under this Contract is not finished and completed by Contractor, in all parts and in accordance with all requirements, within the time specified for completion elsewhere in these Contract Documents, including extensions of time granted because of unavoidable delay; or if at any time prior to the expiration of said time it should appear to GROUP that Contractor will be unable to finish and complete said work as aforesaid within said time; and if Contractor's

failure or inability to finish and complete said work as aforesaid within said time should be due, as determined by GROUP, to avoidable delay or delays, then in that event GROUP, if it finds such to be for the best interests of GROUP, may, but will not be required to, grant to Contractor an extension or extensions of time within which to finish and complete all said work.

6.8.2.2 If such an extension of time is granted, Contractor will be charged liquidated damages as provided for in these General Conditions of the Contract.

6.8.2.3 In addition, if the time limit be so extended, GROUP shall charge to Contractor, and may deduct from the final payment for the work, all engineering and inspection expenses incurred by GROUP in connection with the work during the period of such extension or extensions, except that the cost of final surveys and preparation of final estimates will not be included in such charges. Such expenses of GROUP shall be computed on the basis of the hourly schedule of charges set forth in these General Conditions of the Contract.

6.8.3 Effect Of Extension Of Time

The granting of any extension of time on account of delays which in the judgement of GROUP are avoidable delays shall in no way operate as a waiver on the part of GROUP of its rights under this Contract.

6.9 Proof Of Compliance With Contract

In order that Construction Engineer Representative may determine whether Contractor has complied with those requirements of this Contract with which compliance is not readily ascertainable through inspection and tests of the work and materials, Contractor shall, at any time requested, submit to Construction Engineer Representative properly authenticated documents or other satisfactory evidence as proof of his compliance with such requirements.

7. PAYMENTS TO CONTRACTOR

7.1 Progress Estimates And Payments

7.1.1 Contractor shall, on the 5th day of each calendar month, together with a representative of Construction Engineer Representative, make an estimate of the value of the Work performed in accordance with this Contract since the last preceding Application for Payment was made. Contractor shall then prepare and submit the Application for Payment to Construction Engineer Representative on a periodical estimate form for partial payment, submitting six copies.

7.1.2 The first estimate shall be of the value of the work done and of materials permanently incorporated into the work; and every subsequent estimate, except the final estimate, shall be of the value of the work done and of materials permanently incorporated in the work since the last preceding estimate was made.

7.1.3 No estimate shall be required to be made when, in the judgement of Construction Engineer Representative, the total value of the work done and materials incorporated into the work under this Contract since the last preceding estimate amount to less than $5,000.

7.1.4 The estimates shall be signed by Construction Engineer Representative and approved by GROUP, and after such approval, GROUP, subject to the foregoing provisions, will pay or cause to be paid an amount equal to the estimated value of the work performed less a retained amount in accordance with the following schedule:

7.1.4.1 Ten percent until construction is 50 percent complete.

7.1.4.2 After construction is 50 percent complete the retained amount will remain constant until all work has been completed, provided that Contractor is making satisfactory progress and there is no specific cause for greater withholding.

7.1.4.3 When the project is substantially complete (operational or beneficial use as determined by Construction Engineer Representative) the retained amount will be only that necessary to assure completion of the Contract work.

7.2 Unit Price Items

7.2.1 For all unit price items quantities as set forth are the best estimates which can be made during design, since actual quantities cannot be determined until construction is completed for each item. If any of said quantities is exceeded by not more than 15 percent of the quantity listed, no Change Order for the additional work will be required. If any one of said quantities exceeds the quantity listed by more than 15 percent a Change Order for any work greater than 115 percent will be required before payment for such additional work will be made.

7.2.2 If any work under a unit price item is not performed or if only a small percentage of the quantity listed is used, Contractor shall not make any claims for not using said item or for higher unit prices because of the small percentage of quantity used.

7.2.3 Unit Price Items

Unit price items will be used to pay for work required by the Contract.

7.2.4 Unit Price Work Items "When Ordered" By Construction Engineer Representative During Construction. 303

These unit price items will be used to pay for designated work, "When Ordered" by Construction Engineer Representative in writing during construction. 304

7.3 Payment For Extra Work And Work Deleted 305

7.3.1 Whenever corrections, additions, or modifications in the work under this Contract change the amount of work to be done or the amount of compensation due Contractor except as provided for unit price items, GROUP will prepare a Change Order setting forth the extra work to be performed or work to be omitted. Such a Change Order will also set forth the method of computing the added or reduced compensation to be due Contractor. The method of computing the added or reduced compensation will be determined under one or more of the following methods as selected by GROUP. 306

7.3.1.1 By negotiated unit prices for items not included in Contractor's original bid. 307

7.3.1.2 By an acceptable lump sum price proposal by Contractor. 308

7.3.1.3 By force-account. 309

7.4 Force-Account Payment 311

7.4.1 When work is to be paid for on a force-account basis Contractor will be paid the costs for labor, materials, and equipment plus a markup of 20 percent to the cost of labor, 15 percent to the cost of materials, and 15 percent to the equipment rental. These markups shall constitute full compensation for overhead and profit. .2

7.4.2 It is understood that labor, materials, and equipment may be furnished by Contractor or by a subcontractor or by others on behalf of Contractor. When the work is performed by forces other than Contractor's organization, Contractor shall reach agreement with such other forces as to the distribution of the payment made by GROUP for such work and no additional payment therefor will be made by GROUP. 313

7.4.3 The costs for labor, materials, and equipment will be determined as provided in the following paragraphs: 314

7.4.4 Labor 315

7.4.4.1 The actual wages used in performing the work, whether the employer is Contractor, subcontractor, or other forces, will be the amount paid to workmen including foremen and superintendents devoting their exclusive attention to the work in question. The actual wages shall include payments to, or on behalf of, workmen for health and welfare, pension, vacation, and similar purposes. 316

7.4.4.2 To the actual wages will be added compensation for all payments imposed by state and federal laws, for workmen's compensation, for public liability and property damage insurance, and for all other payments made to, or on behalf of, the workmen other than actual wages. 317

7.4.5 Materials 318

7.4.5.1 Only materials incorporated in the work will be paid for, the cost of which will be the cost to the purchaser, whether Contractor, subcontractor, or other

forces, from the supplier thereof. If Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, or if the cost of such materials is excessive, in the opinion of Construction Engineer Representative, then the cost of such materials shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned delivered to the job site, less any discounts.

7.4.5.2 GROUP reserves the right to furnish such materials as it deems advisable, and Contractor shall have no claims for costs and profit on such materials.

7.4.6 Equipment

7.4.6.1 Contractor will be paid for the use of equipment at the rental rates established as provided in the following paragraphs, which rates shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Operators of rented equipment will be paid for as provided under "Labor".

7.4.6.2 Unless otherwise specified, manufacturers' ratings shall be used to classify equipment for the determination of applicable rental rates.

7.4.6.3 For the use of any equipment normally required for the Contract regardless of whether the equipment is already on the work or is to be delivered to the work and regardless of ownership and any rental or other agreement entered into by Contractor for the use of such equipment, Contractor will be paid as provided herein at the current local rental rates used by established distributors or equipment rental agencies.

7.4.6.4 Individual pieces of equipment not listed and having a replacement value of 50 dollars or less shall be considered to be tools or small equipment and no payment will be made for their use on the work.

7.4.6.5 In computing the hourly rental of equipment, less than 30 minutes shall be considered 1/2 hour, except that the minimum rental time to be paid per day shall be one hour. Rental time will not be allowed while equipment is inoperative due to breakdowns or nonworking days.

7.4.6.6 The rental time of equipment to be paid for shall be the time the equipment is in operation on the force-account work being performed and, in addition, shall include the time required to move the equipment to the site of such force-account work and return it to its original location or to another location requiring no more time than that required to return it to its original location, except that moving time will not be paid for if the equipment is used at the site of the force-account work on other than the force-account work. Loading and transporting costs will be allowed when the equipment is moved by means other than its own power, except that no payment will be made if the equipment is used at the site of the force-account work on other than the force-account work. For the use of equipment not required under the Contract and moved in on the work and used exclusively for force-account work, Contractor will be paid as provided above, except that the rental period shall begin at the time the equipment is unloaded at the site of the force-account work and shall terminate at the end of the day on which the order to discontinue the force-account work is given to Contractor by Construction Engineer Representative. The minimum total rental time to be paid for shall be eight hours.

7.4.7 Reporting And Invoicing

All force account work shall be reported daily and signed by Contractor and Construction Engineer Representative, which daily reports shall thereafter be considered the true record of force account work done. Completely detailed invoices covering the force account work shall be submitted for payment not later than 15 days after the completion of the work. The charges for work performed by Contractor, by a subcontractor, and by an employee of a subcontractor shall be reported separately. Substantiating invoices from suppliers, vendors, and subcontractors shall be included with Contractor's invoices. Contractor shall permit examination of accounts, bills, and vouchers relating to the force account work when requested by Construction Engineer Representative.

7.5 GROUP's Right To Withhold Certain Amounts

7.5.1 GROUP may withhold from payment to Contractor, in addition to the retained percentage, such an amount or amounts as may be necessary to cover:

7.5.1.1 Payments that may be earned or due for just claims for labor or materials furnished in and about the work.

7.5.1.2 Defective work not remedied.

7.5.1.3 Failure of Contractor to make proper payments to a subcontractor.

7.5.1.4 Reasonable doubt that this Contract can be completed for the balance then unpaid.

7.5.1.5 Damage to another contractor, where there is evidence thereof.

7.5.1.6 Excess cost of Construction Engineer Representative, inspection, and other expenses.

7.5.2 GROUP will disburse and shall have the right to act as agent for Contractor in disbursing such funds as have been withheld pursuant to this paragraph to the party or parties who are entitled to payment therefrom. GROUP will render to Contractor a proper accounting of all such funds disbursed in behalf of Contractor.

7.5.3 GROUP also reserves the right, even after full completion and acceptance of the Work, to refuse payment of the final amount due Contractor until it is satisfied that all subcontractors, material suppliers, and employees of Contractor have been paid in full.

7.6 Excess Cost Of Construction Engineer Representative And Inspectors For Overtime

GROUP shall charge to Contractor and may deduct from the periodical and final payment for the work all engineering and inspection expenses incurred by GROUP in connection with any overtime work. For any such overtime during the regular specified construction period beyond the regular 8 hour day and for any time worked on Saturday, Sunday, or holidays the charges for such personnel will be as shown in the following Schedule of Charges.

344 7.7 Excess Cost Of Construction Engineer Representative And Inspectors For Time Extension

These General Conditions of the Contract provide for the payment by Contractor to GROUP of certain engineering and inspection expenses in the event GROUP should grant to Contractor an extension or extensions of time because of avoidable delay. The amount of said engineering and inspection expenses shall be computed and determined on the basis of the per hour schedule of charges as shown in the following Schedule of Charges. 345

347 7.8 Schedule Of Charges

Construction Engineer Representative	$110.00 Per Hour
Inspector.	$90.00 Per Hour
349 Assistant Inspector.	$70.00 Per Hour

350 7.9 Payment For Uncorrected Work

If any portion of the work done or material furnished under this Contract proves defective and not in accordance with the Contract Documents; and if the imperfection in the same is not of sufficient magnitude or importance to make the work dangerous or wholly undesirable; or if the removal of such work is impracticable or will create conditions which are dangerous or undesirable, Construction Engineer Representative shall have the right and authority to retain such work instead of requiring the imperfect work to be removed and reconstructed, but he shall recommend to GROUP such deductions therefor in the payments due or to become due Contractor as may be just and reasonable, and GROUP may 351 make such deductions as are just and reasonable.

352 7.10 Payment For Work By GROUP Following Termination Of The Contract

Upon termination of the Contract by GROUP in accordance with "Right Of GROUP To Terminate Agreement" no further payments shall be due Contractor until the work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the work, including all overhead costs, the excess shall be paid to Contractor. If the cost of completing the work shall exceed the unpaid balance, Contractor shall pay the difference to GROUP. The cost incurred by GROUP, as herein provided, and the damage incurred 353 through Contractor's default, shall be certified by GROUP.

355 7.11 Liquidated Damages For Avoidable Delays

Time is of the essence of this Contract. In case all work called for by the Contract is not finished and completed in all parts and in accordance with all requirements of the Contract on or before the time specified for completion in the Contract Documents (extended by extensions of time granted because of unavoidable delay), substantial damage will be sustained by GROUP. If, because of avoidable delay, GROUP should grant to Contractor an extension of time to finish and complete all the work, it will be difficult and impracticable to determine the actual amount of damage which GROUP will sustain by reason of Contractor's failure to complete the Contract within the time specified as extended. In that event, Contractor shall pay to GROUP as liquidated damages and not as a penalty the sum of liquidated damages as set forth below for each and every calendar day required by him to complete the Contract. Said amounts shall be additional to such other amounts as Contractor may oe required to pay by virtue of other provisions of the Contract because of the granted extensions of time necessitated 356 by avoidable delays.

LIQUIDATED DAMAGES

	Days Late	Liquidated Damages Per Day
Late Submittals or Reports	1 - 7	$ 100.00
	8 - 30	$ 500.00
	After 30	$ 1,000.00
Late Construction Work	1 - 7	$ 500.00
	8 - 30	$ 2,500.00
	31 - 60	$ 5,000.00
	After 60	$ 10,000.00

7.12 Acceptance

Any part of the work may be accepted in writing by GROUP when it shall have been completed in accordance with the terms of the Contract Documents as determined by GROUP and its official representatives. When the work is substantially completed Contractor shall notify GROUP, in writing, that the work will be ready for final inspection and test on a definite date which shall be stated in such notice. The notice shall be given at least 10 days in advance of said date and shall be forwarded through Construction Engineer Representative. GROUP shall cause an inspection to be made in order to determine whether the work has been completed in accordance with the terms of the Contract Documents.

7.13 Final Estimate And Payment

7.13.1 Contractor shall, as soon as practicable after the final acceptance of the work by GROUP under this Contract, make a final estimate of the amount of work done thereunder and the value thereof. Such final estimate shall be checked, approved, and signed by Construction Engineer Representative and by the official representative of GROUP after approval of the governing body of GROUP. After such approval, GROUP shall pay or cause to be paid to Contractor, in the manner provided by law, the entire sum so found to be due hereunder, after deducting therefrom all previous payments and such other amounts as the terms of this Contract prescribe.

7.13.2 Neither the final payment nor any part of the retained percentage shall become due until Contractor shall deliver to GROUP a complete release of claims or liens arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he has knowledge or information the release and receipts include all the labor and materials for which a lien or claim could be filed, but Contractor may, if a subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to GROUP to indemnify GROUP against any claim or lien (in cases where such payment is not already guaranteed by surety bond). If any claim or lien remains unsatisfied after all payments are made, Contractor shall refund to GROUP all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

SPECIAL CONDITIONS

1. POTENTIAL FOR HAZARDOUS WASTE

Portions of the Work may involve exposure to, or handling of hazardous wastes as defined by the Resource Conservation and Recovery Act of 1976 as amended (RCRA). Contractor shall be responsible for all personnel and environmental safety precautions which may be necessary.

For bidding purposes, Level D hazards, as defined in 29 CFR 1910.120, Appendix B, shall be assumed, except as noted in these Specifications. In the event a higher level of personnel protection is required, Contractor shall be reimbursed at the unit rates bid for "Additional Personnel Protection," of the appropriate class.

Contractor shall, in any case, make his own determination of the appropriate level of hazard and shall take the appropriate protective measures.

2. ACCESS TO SITE

Contractor shall grant the United States, the State of Indiana, the City of Marion, and other organizations designated by the Group, unhindered access to the Site to monitor and performance of the Work.

3. SITE SAFETY AND HEALTH PLAN

Any contrary language in these documents notwithstanding, the Contractor shall retain sole responsibility for the health and safety of his personnel.

A Health and Safety Plan has been prepared by ERM, and is included as Volume III of these Documents. This Plan is made a part of this Contract by reference. The Contractor shall, as a minimum, comply with the requirements of this Plan, and with the requirements of the Occupational Safety and Health Act of 1970 as amended (OSHA) as relates to this Contract.

Contractor shall secure approval from the Indiana Department of Environmental Management (IDEM), the U.S. EPA, and all required agencies before beginning any work on site.

If the Contractor adopts a more stringent Health and Safety Plan than that required, he shall submit a copy of his Site Safety and Health Plan to the Construction Engineer Representative for informational purposes, prior to beginning

any work on site, and shall keep the Construction Engineer Representative advised of any changes in the plan.

4. MEDICAL SURVEILLANCE

Contractor shall institute and maintain a medical surveillance plan in accordance with applicable Federal regulations. Copies of medical records of affected employees will be maintained on site in such a way as to be readily accessible in case of emergency.

5. TRAINING

Each worker to be granted access to the site within the "Limit of on-site equipment" area, shall receive health and safety training in accordance with OSHA requirements. Contractor shall be responsible for the training of his employees and subcontractors.

Health and safety documentation shall be maintained on site as required by 29 CFR 1910.120, and current OSHA regulations.

The costs of training and documentation shall be incidental to construction.

6. EMERGENCY RESPONSE

Before beginning any work on site, contractor shall prepare and secure approval of an Emergency Response Plan in accordance with all applicable Federal, State, and local laws and regulations.

7. DECONTAMINATION OF EQUIPMENT

All equipment which enters the "Limit of on-site Equipment" for work on the cap or site, as shown on the plans, will be decontaminated before being allowed to leave the site. Equipment which remains in the hard stand/contractor area need not be decontaminated.

As a minimum, Contractor shall maintain decontamination area as shown on plans. Decontamination area shall contain steam cleaning and high pressure washing equipment. Decontamination area, shall be kept clear of equipment or vehicles.

Contractor shall submit a decontamination plan for approval by the Engineer before construction. Wash water used in decontamination of equipment and personnel will be tested by the Group to determine if it can be disposed of on site. If treatment or off site disposal of wash water is required, it shall be done at the Group's expense.

8. CLEANING OF EQUIPMENT

Vehicles and equipment which enter the unloading area up to the "Limit of off site Equipment" as shown on the plans shall be cleaned before being allowed to leave the site to minimize depositing materials on public roads.

9. CERTIFICATION OF MATERIALS

Contractor shall certify that all construction materials are free of hazardous waste or any hazardous chemicals. Contractor shall submit his sampling and analysis plan for Engineer's review prior to causing any materials to be delivered to the site.

All soil materials to be furnished, including Common Fill, Impervious Cap, and Topsoil, will be analyzed by an independent laboratory to be paid for by the Contractor. A minimum of one sample per 10,000 cu. yds. will be taken and analyzed, using methods approved by the US E.P.A., for Priority Pollutants, except PCBs and pesticides on such list, and IDEM conventional landfill parameters, including ammonia.

10. PERIODIC REPORTS

Contractor shall prepare and provide to the Construction Engineer Representative, written monthly progress reports which:

(1) Describe the actions which have been taken to complete the Work during the previous month;

(2) Include all results of sampling and testing and all other data received by the Contractor during the previous month;

(3) Summarize all plans and procedures relating to the Work completed during the past month;

(4) Describe all actions, data, and plans which are scheduled for the next month and provide other information relating to the progress of construction as is customary in the industry;

(5) Include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule of the Work, any scheduled deadlines which have been missed, and a description of efforts made to mitigate those delays or anticipated delays.

These reports are to be submitted to the Resident Construction

Representative, no later than the fifth calendar day of each month following the effective date of the Notice to Proceed.

Contractor shall report verbally within 2 working days of becoming aware of any event or occurrence which is likely to cause delay in the performance of the Work.

11. EMERGENCY REPORTS

Upon the occurrence of any event during performance of the Work which, pursuant to Article 103 of CERCLA, 42 USC 9603, requires reporting to the National Response Center, the Contractor shall promptly orally notify the U. S. EPA Project Manager ("RPM") and the Construction Engineer Representative; or in the event of unavailability of the RPM, the Emergency Response Section, Region V, United States Environmental Protection Agency, in addition to the reporting required by Article 103.

Within 15 days of the onset of such an event, the Contractor shall furnish the Construction Engineer Representative a written report setting forth the events which occurred and the measures taken, and to be taken, in response thereto.

Within 25 days of the conclusion of such an event, Contractor shall submit a written report setting forth all actions taken to respond thereto.

12. DIFFERING SITE CONDITIONS

The Contractor shall promptly, and before such conditions are disturbed, notify the Construction Engineer Representative in writing of:

(1) Subsurface or latent physical conditions at the site differing materially from those indicated in the Plans or Specifications, or

(2) Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the nature provided for in this Contract.

The Construction Engineer Representative shall promptly investigate the conditions. If he finds that conditions materially differ and will cause an increase or decrease in the Contractor's cost or the time required to perform any part of the work under this Contract, whether or not changed as a result of such conditions, the GROUP shall make an equitable adjustment and modify the Contract in writing.

No claim of the Contractor under this clause shall be allowed

unless the Contractor has given the notice required herein. However, the GROUP may extend the time prescribed for completion.

No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this Contract.

13. FEDERAL COST RECOVERY

Contractor shall assist the United States, in accordance with such requests for assistance as it shall make, in any cost recovery action subsequently brought by the United States to recover compensation paid to Generator Defendants. The Contractor and subcontractors shall furnish the necessary personnel, services, documents, materials and other assistance to assist the United States in collection of evidence documenting the work performed and costs expended by the Generator Defendants or their contractors or consultants with regard to the Facility, in aid of such cost recovery action. The contractors and subcontractors shall also provide all requested assistance in the interpretation of evidence of work and costs, and provide required testimony.

All contracts entered into in implementing the Work shall include a specific requirement that the contractors agree to provide this cost recovery assistance.

14. CHANGE ORDER MANAGEMENT

The Contractor and the Group will comply with a change order management policy and procedure in accordance with EPA's guidance on State Procurement Under Remedial Cooperative Agreements (OSWER Directive 9375.1-5, March 1986).

15. ELIGIBLE COST

The Contractor will not be reimbursed for eligible costs which are those costs incurred, consistent with the NCP, in carrying out the remedial action, subject to the following limitation:

> Costs incurred for services performed by a person who is listed on the EPA Master List of Debarred, Suspended or Voluntarily Excluded Persons at the time the contract is awarded shall not be eligible for reimbursement unless the Settling Defendants obtain approval from EPA pursuant to 40 CFR Part 32 prior to incurring the obligation.

16. GENERAL SEQUENCE OF WORK

The Contractor's Construction Schedule shall be developed and construction work shall proceed along the following general

sequence of work:

a. Clearing necessary for monitoring well installation.

b. Install monitoring wells. (To be completed prior to proceeding with Item C.)

c. Clean up of solid waste material and relocating from along the river, pond on perimeter of site.

d. Clearing necessary for fence installation.

e. Install site fencing and gates.

f. Abandonment of monitoring wells.

g. Balance of construction through project close out.

SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

SECTION:

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FOR

DIVISION 1

GENERAL REQUIREMENTS

SECTION 1A

SUMMARY OF WORK

1. WORK COVERED BY CONTRACT DOCUMENTS

The Work to be performed is as described in the Invitation to Bid.

2. CONTRACTOR'S DUTIES

2.1 Except as specifically noted, provide and pay for:

Labor, materials, and equipment;

Tools, construction equipment, and machinery;

Necessary utilities, such as water supply, electrical power, telephones, roads, fences, and sanitary facilities, including maintenance thereof;

Other facilities and services necessary for proper execution and completion of the Work.

2.2 Perform all the work described in these General Requirements except where specifically indicated to be done by others.

2.3 Pay legally required sales, consumer, and use taxes.

2.4 Secure and pay for legally required permits, licenses, and government fees.

2.5 Give required notices.

2.6 Employ workmen and foremen with sufficient knowledge, skill, and experience to perform the work assigned to them.

2.7 Comply with the codes, laws, ordinances, rules, regulations, orders, and other legal requirements of public authorities bearing on the conduct of the work.

2.8 Submit written notice to Construction Engineer Representative of observed variance of Contract Documents from legal requirements. Any necessary changes will be adjusted as provided in the Contract for changes in the Work.

2.9 Enforce discipline and good order among Contractor and subcontractor employees. Any person employed by Contractor or subcontractors who does not perform his work in a skillful manner, is incompetent, or acts in a disorderly or intemperate manner shall, at the written request of GROUP, be removed from the project immediately and shall not be employed again in any portion of the Work without the approval of GROUP.

2.10 Provide at all times facilities for access and inspection of the Work by representatives of GROUP and of official governmental agencies designated by GROUP as having the right to inspect the work.

2.11 Cooperate with other contrattors who may be performing work for GROUP, and with GROUP's employees working in the vicinity of the Work done under this Contract.

3. CONTRACTOR'S USE OF PREMISES

3.1 Confine operations at site to areas permitted by law, ordinances, permits, and the Contract Documents.

3.2 Comply with and enforce GROUP's instructions regarding signs, advertisements, fires, and smoke.

3.3 Assume responsibility for protection and safekeeping of products stored on premises.

3.4 Do not discharge smoke, dust, or other contaminants into the atmosphere, or fluids or materials into any waterway as will violate regulations of any legally constituted authority.

3.5 Move stored products which interfere with the operations of GROUP or other contractors.

3.6 Obtain and pay for additional storage or work areas needed for operations.

3.7 Comply with GROUP's regulations regarding consumption of alcohol or drugs on the site.

4. ABBREVIATIONS

The following abbreviations as used in the Contract Documents have the listed meanings:

4.1 Standards Organizations

AA . . . . Aluminum Association
AASHTO . . American Association of State Highway and Transportation Officials
ACI . . . American Concrete Institute
ADC . . . Air Diffusion Council
AGA . . . American Gas Association
AGMA . . . American Gear Manufacturers Association
AISC . . . American Institute of Steel Construction
ANSI . . . American National Standards Institute
ARI . . . Air Conditioning and Refrigeration Institute
ASHRAE . . American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME . . . American Society of Mechanical Engineers
ASTM . . . American Society for Testing and Materials
AWS . . . American Welding Society
AWWA . . . American Water Works Association

CRSI . . . Concrete Reinforcing Steel Institute

FIA . . . Factory Insurance Association
FM . . . . Factory Mutual
FS . . . . Federal Specifications

IEEE . . . Institute of Electrical and Electronic Engineers

MS . . . . Military Specifications

NBBPVI . . National Board of Boiler and Pressure Vessel Inspectors
NBS . . . National Bureau of Standards
NEC . . . National Electrical Code
NEMA . . . National Electrical Manufacturers Association
NFPA . . . National Fire Protection Association

OSHA . . . Occupational Safety and Health Administration

UL . . . . Underwriters Laboratory

4.2 Units of Weight and Measures

A . . . . ampere

btu . . . British thermal unit

C . . . . degrees Celsius
cc . . . . cubic centimetre
cf . . . . cubic foot
cfm . . . cubic feet per minute
cm . . . . centimetre
cm/s . . . centimetre per second

dB . . . decibel

F . . . . degrees Fahrenheit
fpm . . . feet per minute
fps . . . feet per second
ft . . . . feet

g . . . . gram
ga . . . . gauge
gal . . . gallon
gpm . . . gallons per minute

hp . . . . horsepower
h . . . . hour
Hz . . . . hertz

kV . . . . kilovolts
kVA . . . kilovolt-amperes
kW . . . . kilowatts
kwh . . . kilowatt hours

L . . . . litre
lb . . . . pound
lbs . . . pounds

mA . . . . milliamperes
mg/L . . . milligrams per litre
mgd . . . million gallons per day
mL . . . . millilitre
mm . . . . millimetre
MVA . . . megavolt-ampere

ppm . . . parts per million
psf . . . pounds per square foot
psi . . . pounds per square inch gauge

rpm . . . revolutions per minute

scfm . . . standard cubic feet per minute
sf . . . . square feet
sy . . . . square yard

V . . . . volt
VA . . . . volt-ampere

4.3 Other Abbreviations

AC . . . . alternating current
AHU . . . air conditioning unit

Bil . . . basic impulse insulation level
BOD . . . biochemical oxygen demand

Co. . . . Company
conc . . . concrete
Corp . . . Corporation
CP . . . . concrete pipe
cu . . . . cubic
CSP . . . corrugated steel pipe

DC . . . . direct current
dpdt . . . double pole, double throw 68

H-O-A . . hand-off-automatic 69

Inc. . . . Incorporated 70

LPG . . . liquid petroleum gas 71

max. . . . maximum
min. . . . minimum 72

N.C. . . . normally closed
N.O. . . . normally open
No. . . . number 73

pvc . . . polyvinyl chloride 74

Rms . . . root mean square
RTRP . . . reinforced thermosetting resin pipe 75

scr . . . silicon controlled rectifier
spdt . . . single pole, double throw
sq . . . . square
stc . . . sound transmission coefficient 76

U.S. . . . United States 77

END OF SECTION 1A

SECTION 1C

SUBMITTALS

1. PROGRESS SCHEDULE

1.1 Prepare a detailed Progress Schedule in graphic form showing proposed dates of starting and completing each major division of the Work.

1.2 The schedule shall be consistent with the time and order of work requirements of the Specifications, and shall be the basis of Contractor's operations.

1.3 A condensed critical path method schedule is preferred but another practicable form of presentation will be acceptable.

1.4 Submit 3 copies to Construction Engineer Representative within 14 days after Notice to Proceed.

1.5 At the end of every month, submit a revised schedule showing the current status of the Work as compared to the projected status. The current application for a progress payment will not be processed until the revised schedule is delivered to Construction Engineer Representative.

2. BREAKDOWN OF CONTRACT AMOUNT

2.1 Submit a typewritten breakdown of contract amount on an acceptable form for use in computing and checking periodical payment estimates.

2.2 No payment will be made until the breakdown has been submitted and accepted by Construction Engineer Representative.

3. LIST OF MANUFACTURERS

3.1 Within 60 days after execution of the Contract, submit to Construction Engineer Representative a list of manufacturers of items of equipment or assembly fabricated off the site which are intended to be furnished.

3.2 Furnish for each item:

Manufacturer's specifications;

Performance data;

Additional data as necessary to demonstrate that the materials and equipment comply with the provisions and intent of the Contract Documents.

3.3 If the information shows deviations from the Contract Documents, submit in writing a statement with the submittal advising Construction Engineer Representative of the deviations and the reasons therefor, and state that there will be no additional cost to GROUP.

4. SHOP DRAWINGS, PROJECT DATA, AND SAMPLES

4.1 General

4.1.1 Submit to Construction Engineer Representative shop drawings, project data, and samples required by the Specifications.

4.1.2 A 4-part submittal record form shall accompany each submittal. A suggested layout of the record form will be

provided by Construction Engineer Representative. The forms used shall be provided by Contractor subject to Construction Engineer Representative review.

4.2 Shop Drawings

4.2.1 Shop drawings are original drawings prepared by the Contractor, subcontractors, suppliers, or distributors which illustrate some portion of the Work and show fabrication, layout, setting, or erection details of equipment, materials, and components.

4.2.2 Unless otherwise instructed, submit to Construction Engineer Representative for review and acceptance five prints of each plan or 2 prints and one reproducible sepia or reproducible on vellum. Construction Engineer Representative will return with review comments one print or one reproducible.

4.2.3 Shop drawings shall be 8-1/2 x 11 or 8-1/2 x 14 inches or standard size plans, or as directed by Construction Engineer Representative, and shall be clearly identified as to location of the equipment, material, and apparatus in the Work. Submittals shall show the name, address, and telephone number of the company that prepared them.

4.2.4 Fold drawings to an approximate size of 8-1/2 x 11 inches in such a manner that the title block will be located in the lower right hand corner of the exposed surface. Roll, do not fold, reproducible copies of drawings.

4.2.5 Furnish Construction Engineer Representative, as requested, without extra charge therefor, the number of complete sets of prints of shop drawings, as accepted, as Construction Engineer Representative shall request (in general, no fewer than 4) for office files and for use in the field.

4.3 Project Data

4.3.1 Project data are manufacturers' standard schematic drawings, catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Project data shall be submitted on all materials and equipment with a purchase price of $500 or more.

4.3.2 Modify drawings to delete information not applicable and to add information applicable to the project.

4.3.3 Mark copies of printed material to identify pertinent materials, products, or models.

4.3.4 Project data shall show the name, mailing address, and telephone number of the manufacturer and of the supplier.

4.3.5 Submittal procedures shall be the same as for shop drawings.

4.4 Samples

4.4.1 Samples are examples to illustrate materials, equipment, or workmanship, and to establish standards by which completed work is judged.

4.4.2 Samples submitted shall be of sufficient size and quantity to illustrate functional characteristics of product or material and full range of colors available.

4.5 Contractor Responsibilities

4.5.1 Review and approve shop drawings, project data, and samples before submitting them.

4.5.2 Verify field measurements, field construction criteria, catalog numbers, and similar data.

4.5.3 Coordinate each submittal with the requirements of the Contract Documents.

4.5.4 In a clear space above the title block, or on the back, hand stamp the following, and enter the required information:

Marion Bragg P.R.P. Group

Marion Bragg Landfill Closure

Date.....

Identification.....

Contract Drawing No. .....

Specification Section .....

This document has been checked for accuracy of content and for compliance with the Contract Documents and is hereby approved. The information contained herein has been coordinated with all involved contractors.

Contractor .....

Signed .....

4.5.5 Contractor's responsibility for errors, omissions, and deviations from requirements of the Contract Documents in submittals is not relieved by Construction Engineer Representative's review.

4.5.6 Notify Construction Engineer Representative, in writing at time of submittal, of deviations in submittals from requirements of the Contract Documents.

4.5.7 Do not install materials or equipment which require submittals until the submittals are returned with Construction Engineer Representative's stamp and initials or signature indicating acceptance.

4.5.8 Revise returned shop drawings as required and resubmit until final acceptance is obtained. Indicate on the drawings any changes which have been made other than those requested by Construction Engineer Representative.

4.5.9 Submit new project data and samples when the initial submittal is returned rejected.

4.5.10 No claim will be allowed for damages or extension of time because of delays in the work resulting from rejection of material or from revision and resubmittal of shop drawings, project data, or samples.

4.6 Construction Engineer Representative's Duties

4.6.1 Construction Engineer Representative will review submittals for compliance with the Contract Documents and with the design concept of the project.

4.6.2 Review of a separate item does not constitute acceptance of an assembly in which the item functions.

4.6.3 Construction Engineer Representative will affix a stamp to the returned copy of each submittal. The stamp will be marked to indicate whether the submittal is "Accepted", "Accepted as Noted", or "Rejected", and an explanation will be given if the submittal is unsatisfactory. The stamp will be initialed or signed certifying the submittal review.

5. DRAWINGS SHOWING DEVIATIONS FROM CONTRACT DRAWINGS

5.1 Submit detailed drawings of modifications or deviations to the Drawings required to accommodate equipment, or facilities, included in the awarded Contract which differ from those shown.

5.2 The drawings shall show modifications to site work, piping, equipment, and all other changes.

5.3 Submittal procedures shall be the same as for shop drawings.

5.4 Construction Engineer Representative will review drawings and indicate thereon changes necessary to comply with the project requirements. One copy of the submittals will be returned to Contractor.

5.5 Revise drawings if necessary and resubmit to Construction Engineer Representative.

5.6 Do the work in conformance with the accepted drawings, and at no increase in Contract Price.

6. CONSTRUCTION PHOTOGRAPHS

6.1 Provide construction photographs taken within the first three working days of each month.

6.2 Take photographs before starting work on the site and at final completion of the project. Take photographs each month during the construction of the project.

6.3 Take one aerial photograph before beginning, and after completing construction and submit three prints of each exposure.

6.4 Take 10 photographs of representative areas of the Project Site and submit three prints of each photograph. Photographs to indicate work being performed, indicate stage of completion and Contractor's progress.

6.5 When work is complete take 10 additional photographs and submit three prints of each.

6.6 Photographer's place of business shall be located within 25 miles of the project site.

6.7 Film size shall be 35 mm or larger.

6.8 Prints shall be color, with smooth surface, glossy finish, 8 x 10-inch size, single weight paper, mounted on muslin with 1-inch hinged binding edge.

6.9 Identify each print on the back with name of project, description of view, date, and name of Contractor. Name and address of photographer may appear on back.

6.10 Consult with Construction Engineer Representative for instructions concerning photograph views required at each specified visit to the site.

6.11 Provide one suitable size 3-ring binder for each set of

prints. Binders shall be furnished in sufficient quantity to hold all photographs taken for the duration of the Contract. Each binder shall be engraved on the front with the project name.

6.12 Deliver prints and negatives monthly to Construction Engineer Representative.

7. MEASUREMENT AND PAYMENT

Submittals shall be paid for under the payment item for "Submittals".

END OF SECTION 1C

SECTION 1D

TESTING

1. GENERAL

1.1 Perform the inspections and testing required by the Specifications.

1.2 Provide product certifications as required by the Specifications.

1.3 Neither observations by Construction Engineer Representative, nor inspections, tests, or approvals by other than Contractor, shall relieve Contractor from his obligation to perform the Work in accordance with the requirements of the Contract Documents.

1.4 Sampling shall be consistant with and subject to the requirements of "A Compendium of Super Fund Field Operations", EPA/540/P-87/001, dated December 1987.

2. TESTING LABORATORY SERVICES

2.1 GROUP will pay for the services of an independent testing laboratory to perform specified services. The GROUP will pay all invoices submitted by the laboratory.

2.2 Laboratory shall meet "Recommended Requirements for Independent Laboratory Qualification" published by the American Council of Independent Laboratories. In addition, laboratories conducting tests of potential waste materials shall be approved by EPA.

2.3 Laboratory Duties

2.3.1 Perform specified tests and services.

2.3.2 Comply with specified standards, ASTM, other recognized authorities, and as specified.

2.3.3 Ascertain compliance with requirements of Contract Documents and so note in writing on all reports.

2.3.4 Promptly notify Construction Engineer Representative and Contractor of irregularities or deficiencies of work observed during performance of services.

2.3.5 Promptly submit 3 copies of reports of inspections and tests to Construction Engineer Representative.

2.3.6 Include in the reports date, project title, and number, name, and signature of inspector, date of inspection or sample, record of temperature and weather, date of test, identification of product and Specification Section, location in project, type of test, and observations regarding compliance with requirements.

2.3.7 The GROUP will select and employ the testing laboratory.

3. CONTRACTOR'S RESPONSIBILITIES 193

3.1 Cooperate with laboratory personnel. 1

3.2 Provide to laboratory samples of materials to be tested in required quantities. 195

3.3 Provide facilities for storage of test samples. 196

3.4 Notify Construction Engineer Representative sufficiently in advance of time and place of tests to be made at point of manufacture, assembly, or fabrication to permit Construction Engineer Representative to witness tests if he so desires. 197

3.5 Provide additional information the testing laboratory may require, such as location test sample was taken, weather data or conditions at time sample was taken and labeling of samples. 198

4. MEASUREMENT AND PAYMENT 199

Testing shall be incidental to construction. 200

END OF SECTION 1D

SECTION 1E

TEMPORARY FACILITIES AND SITE CONTROLS

1. USE OF PROJECT SITE

1.1 Water or otherwise treat roadways and other areas of the construction site to prevent dust from becoming a nuisance.

1.2 Submit a dust control procedure for review before starting work. No oil or materials containing any priority pollutants will be allowed or used on the site.

1.3 Except as necessary for construction, do not allow employees or suppliers to drive through, occupy, or otherwise use improved portions of the project site.

1.4 Construct and maintain suitable and safe crossings over trenches or provide detours as necessary to care for public and private traffic.

1.5 Contractor's vehicles and mobile equipment shall adhere to a speed limit of 15 miles/h in the project area. This speed limit shall be posted.

1.6 Provide flagmen at junctions of public traffic and Contractor vehicles and equipment.

2. TEMPORARY UTILITIES

2.1 Water

2.1.1 Furnish and install temporary water system. Two existing site wells may be utilized for non-potable water supply. All non-potable water points to include hose bibbs and wash points shall be prominently identified within a sign bearing the words

DANGER
NON-POTABLE WATER
DO NOT DRINK

2.1.2 Remove temporary water system at the end of construction, decontaminate all components by pressure washing or steam cleaning, and dispose of in an approved manner, off-site.

2.1.3 Abandon wells used for temporary water supply as described in these Specifications.

2.1.4 Provide an adequate supply of potable water in bottles or other approved means.

2.2 Sewer and Drainage

2.2.1 Furnish and install temporary sewers and septic tank system. Septic tank and drain field shall comply with applicable provisions of the U.S. Public Health Service Publication No. 526, "Manual of Septic Tank Practice", and with State and Local laws and regulations.

2.2.2 Pump septic tank as required, and at the completion of work, and dispose of contents in an approved manner, off-site. Septic tank pumping shall be performed by a licensed septic tank contractor, in accordance with local and state laws.

2.2.3 After pumping, septic tank shall be disinfected, broken up and buried in place. Backfill with select aggre-

gate in six inch lifts, compacting each lift to 90 percent of modified Proctor density. Finish with topsoil and seeding as described in these Specifications.

2.2.4 Decontamination Water

2.2.4.1 Water shall not be discharged from the system until it has been tested by the GROUP, and found safe for discharge on site. GROUP shall take appropriate samples, and will have them analyzed, using methods approved by the U.S. EPA, for Priority Pollutants.

2.2.4.2 If the water is determined to be free of contamination, it may be released on site.

2.2.4.3 In the event the water is found to be contaminated, it will be treated, at the GROUP's expense prior to discharge or eventual disposal off site.

2.3 Electricity

2.3.1 Furnish and install required electrical power service to office trailers, outside lighting and other temporary facilities requiring electrical service.

2.3.2 Existing electric service lines and distribution system that exist on the site may be utilized for temporary use.

2.3.3 Remove all electrical power services, wires, poles and distribution system after completion of construction and the power is not required. All removed items will be disposed of off site.

2.4 Lighting

2.4.1 Provide adaquate lighting for work areas, storage and trailer area, overnight equipment parking areas and security lighting at site entrance gates

2.4.2 Provide temporary lighting for construction needs, public safety and security lighting.

2.5 Toilet and Shower Facilities

2.5.1 Provide toilet and shower facilities for use of all worker and authorized parties throughout construction period.

2.5.2 Provide a minimum of 3 urinals, 2 water closets, 3 lavatories, 3 shower stalls and two emergency shower/eye wash units.

2.5.3 Provide locker and clothing change room. Provide adaquate number of lockers to be assigned to each worker on site.

2.6 First Aid Room

Provide first aid room or designated space in an office trailer where a worker may receive first aid.

3. CONSTRUCTION ENGINEER REPRESENTATIVE'S TRAILER

3.1 Contractor shall provide, equip, and maintain an office trailer, fully insulated, approximately 46 ft long and 12 ft wide in construction trailer parking area as shown on Plans.

3.2 The office and equipment furnished will remain the property of Contractor. Remove trailer 30 days after notifcation of final acceptance of the project.

3.3 Provide aluminum screens for windows and doors.

3.4 Provide venetian blinds on windows.

3.5 Divide trailer into one large office and two smaller offices, one at each end. Provide partitioned washroom, wardrobe closet and storage closet in larger room. Obtain prior approval of Construction Engineer Representative of floor plan. Each room shall have doors with integral locks, keyed alike.

3.6 Equip washroom with flush toilet, shower stall, wash basin with 2 faucets, medicine cabinet with supplies, toilet tissue holder, 20-gal capacity automatic electric water heater, and paper towel holder.

3.7 Provide materials which will result in freeze-proof operation of water supply and drain. Drain waste to septic tank.

3.8 Install thermostatically controlled built-in electric baseboard heaters, located as directed by Construction Engineer Representative. Heaters shall be capable of maintaining 70F in the trailer when outside temperature is zero.

3.9 Furnish a 100-A, 120/240-V, 1-phase service entrance connection, grounding, enclosed fused service switch, and branch circuit fused boxes.

3.10 Provide two 4-ft single tube fluorescent fixtures in the small office and six in the large office. Provide an incandescent fixture in the washroom.

3.11 Provide one wall switch for each room.

3.12 Provide 2 duplex convenience outlets in the small office and 6 in the large office.

3.13 Provide telephone service with 2 pushbutton sets. Pay all costs for supplying service.

3.14 Monthly charges for telephone service will be paid by others.

3.15 Provide built-in equipment as follows:

3.15.1 One drafting table in large room with a 36 x 72-inch top, with cabinet and plan drawer at least 42 x 36 inches in size below, and with drafting stool.

3.15.2 One floor type, movable plan rack at least 30 inches wide with 12 hanger spaces.

3.15.3 One air conditioner in eath office rated 9,000 btu/h per machine.

3.15.4 One full width desk at each end of trailer, 30 inches deep, with plastic laminated top, cabinets over, and three 2-drawer filing units under with integral locks keyed alike.

3.16 Provide movable equipment as follows:

3.16.1 Two single pedestal steel desks with locks, 45 x 34-inch, plastic laminate top.

3.16.2 Three swivel chairs with arms, upholstered.

3.16.3 Eight side chairs without arms, upholstered.

3.16.4 Three waste baskets.

3.16.5 Three 4-drawer legal size steel files with locks.

3.16.6 Two fire extinguishers, rated 1A 10BC, wall mounted.

3.16.7 One electric bottle water cooler with hot water tap and accessory refrigerator.

3.16.8 Electric typewriter, plain paper dry type electrostatic copier, capable of producing multiple copies automatically up to size 8-1/2-inch x 14-inches, and electric calculator with tape.

3.16.9 One double pedestal desk, 38 x 70, with standard finish and plastic laminate top.

3.17 Have trailer on site and office equipped and ready for use within 15 days after Notice to Proceed.

3.18 Install wooden stairs, 5 x 5-ft platform, and handrail at each exterior door.

3.19 Provide and maintain a gravelled access road and parking area for six automobiles.

3.20 Provide a sign on the outside identifying it as the engineering field office of Construction Engineer Representative.

3.21 Provide fire, extended coverage and vandalism, malicious mischief, and burglary and theft insurance coverage for trailer contents furnished by Group or Construction Engineer Representative in the amount of $10,000. Provide proof of coverage for the duration of the project.

3.22 Furnish and replenish light bulbs, fluorescent tubes, toilet paper, paper towels, soap, bottled water, and other things required to maintain the office in a clean condition.

3.23 Wash floor and clean washroom fixtures at least once each week. Wash windows when needed or when requested. Sweep floor and dust furnishings daily.

3.24 Maintain office in first class condition for the duration of the project.

3.25 Pay all utility costs, except telephone.

4. SITE CONTROLS

4.1 Traffic Control and Site Access

4.1.1 The Contractor shall exercise positive control over all traffic entering or leaving the Site at Central Avenue. Flagmen and temporary traffic control signals shall be employed where construction traffic enters, leaves and crosses the public right of way and otherwise as required.

4.1.2 All traffic control devices shall be reflectorized prior to installation and cleaned as necessary throughout the duration of the Work. Cover or remove traffic control devices when not in use.

4.1.3 All construction personnel shall be required to wear flourescent vests and other required safety equipment while in the public right of way.

4.1.4 Night operations, if any, shall be carried out in a manner to ensure utmost safety to vehicular and pedestrian traffic. Artificial lighting, if used, shall be arranged to prevent glare onto adjacent property and travelled ways.

4.1.5 Parking, office and facilities trailers and storage areas will be designated. The proposed area for these facilities will be as shown on Plans. All contractor construction equipment will be parked in designated areas in these spaces.

4.2 Security During Construction

4.2.1 Maintain security during construction to prevent unauthorized entrance. Install a permanent fence along the Independent Order of Odd Fellows Cementery border to provide security during construction.

4.2.2 The existing fence and gate arrangements of the dobson property may remain in place and be used to control vehicular access.

4.2.3 Install permanent fence on north and east side of Dobson Construction. Install permanent fencing along balance of west property line, south property line and along entire site adjacent to the river.

4.2.4 Install all fencing prior to placing any cap common fill material and while clearing and grubbing operation is in process.

4.2.5 Install temporary construction fencing as necessary to close in entire site if it is not reasonable to complete the installation of the permanent fencing while the clearing and grubbing operation is ongoing.

4.2.6 Check all permanent or temporary fencing at the end of each work day and make any repairs required to maintain security.

4.2.7 There shall be a security guard on the site at all times when the contractors forces are not at the site. Guard to be assigned to project site up to the completion of the site fence and gates. Security guard shall perform routine perimeter patrols.

4.3 Sign

4.3.1 The project will not require a project sign.

4.3.2 The Contractor may install signs at the entrance to the project site to facilitate the delivery of materials, to identify enter and exit gates, worker gates, parking areas and to provide for safety or security.

5. MEASUREMENT AND PAYMENT

Temporary facilities and site controls shall be paid for under the payment items for "Temporary Facilities And Site Controls".

END OF SECTION 1E

SECTION 1G

CONSTRUCTION CLEAN-UP

307 1. DESCRIPTION

1.1 A program to maintain Hard Stand/Contractors area and fenced in landfill site free from accumulations of waste, debris, and rubbish caused by construction operations shall be
308 submitted.

1.2 When Work is complete, decontaminate all removed tools,
309 equipment, machinery, and surplus materials.

310 2. CONTRACTOR'S WASTE

2.1 Store volatile or flammable materials, such as liquids, engine oil or solvents, in covered containers, and remove from
311 site by Contractor.

2.2 Do not allow accumulation of solid or liquid wastes which
312 create hazardous conditions.

2.3 Provide adequate ventilation during use of volatile or
313 noxious substances.

2.4 Do not burn any waste or build any fires on site. Do not bury any waste on site without prior permission of the Con-
314 struction Engineer Representative.

2.5 Store solid waste generated by the Contractors operation, such as engine air filters, rags used in equipment maintenance,
315 lubricant containers and etc., in covered containers or drums.

.6 3. CLEANING DURING CONSTRUCTION

3.1 Perform cleaning operations daily to ensure that grounds and public property outside the site fence are maintained free
317 from accumulations of waste materials and rubbish.

3.2 Sprinkle with water dry materials and rubbish to lay dust
318 and prevent blowing dust and paper.

3.3 At weekly intervals during progress of Work, clean Hard Stand/Contractor area, and public properties, and dispose of
319 waste materials, debris, and rubbish.

3.4 Provide containers for collection of waste materials,
320 debris, and rubbish.

3.5 Remove waste materials, debris, and rubbish from Hard Stand/Contractor area and legally dispose of it at public or
321 private dumping areas.

3.6 Sweep Central Avenue and other haul roads where necessary
322 to remove construction debris and spilled soil.

3.7 Wash the paved portion of the Hard Stand/Contractor area, into the Protected Drainage Facility at the end of each working
323 week at a minimum.

3.8 The Contractor shall be responsible for ensuring that the Central Avenue pavement is kept clean. Any material or debris deposited on the pavement by vehicles entering or leaving the Site shall be removed. The pavement shall be cleaned at the end of each day, or as directed by the Construction Engineer Repre-
324 sentative.

4. CLEANING AND DECONTAMINATION OF EQUIPMENT

4.1 All equipment and vehicles which enter the "Limit Of On-Site Equipment" Work Area as shown on the Plans, shall be decontaminated before being allowed to leave the Site.

4.2 Decontamination shall include physically removing accumulations of mud, solid waste, and refuse and sweeping the vehicle interior. Steam clean, pressure wash, or use another accepted method to thoroughly remove all residue of waste.

4.3 Direct spent wash water to Protected Drainage Facility.

4.4 Vehicles of site visitors, contractors employees, representatives of the GROUP and delivery trucks which remain in the Hard Stand/Contractor Area and within "Off-Site Equipment" limits do not need to be decontaminated, unless directed by the Construction Engineer Representative.

5. FINAL CLEANING

5.1 Wash down and clean the interiors and exteriors of construction trailers prior to removal from site.

5.2 Remove any accumulation of waste material or rubbish from site and from public roads and Mississinewa River bank adjacent to the site.

5.3 Sweep streets as required to remove construction debris and spilled soil.

5.4 Broom clean paved surfaces.

5.5 Continue cleaning until project, or portion thereof, is accepted by GROUP.

5.6 Remove temporary buildings used by Contractor and subcontractors.

5.7 Remove contractors signs.

6. MEASUREMENT AND PAYMENT

Construction clean-up shall be paid for under the payment items for "Construction Clean-Up".

END OF SECTION 1G

SECTION 1H

PROJECT CLOSEOUT

1. FINAL INSPECTIONS

1.1 Notify Construction Engineer Representative in writing when project, or designated portion of project, is substantially complete.

1.2 Construction Engineer Representative will make an inspection of the substantially completed work, and prepare and submit to Contractor a list of items to be completed or corrected.

1.3 Take immediate steps to remedy the listed deficiencies, and notify Construction Engineer Representative in writing that the project is complete and ready for final inspection.

1.4 Construction Engineer Representative will make a final inspection and, if he considers the work is complete, he will notify the GROUP that the work is ready for final acceptance.

2. CLOSEOUT SUBMITTALS

2.1 Special guarantees and bonds.

2.2 Keys.

2.3 Certificates of inspection required by laws and ordinances for any legally required inspections.

2.4 Contractor's waiver of liens.

2.5 Separate waivers of lien for subcontractors, suppliers, and others with lien rights against property of GROUP.

2.6 Final payment estimate.

3. MEASUREMENT AND PAYMENT

Project closeout shall be incidental to construction.

END OF SECTION 1H

DIVISION 2

SITEWORK

SECTION:

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SECTION 2A

CLEARING

SECTION 2A

CLEARING

1. SHRUB AND TREE REMOVAL

1.1 Clearing and Grubbing

1.1.1 Clear and grub the existing top surface of the landfill area to limits as shown on Plans of all trees, brush, vegetation and other solid wastes. This must be accomplished prior to earthwork.

1.1.2 Do not remove or damage trees or shrubs located along river between fence and edge of river which are to be saved.

1.1.3 Remove stumps and matted roots in areas indicated on plans, or where directed.

1.2 Methods

1.2.1 Remove trees, stumps, bushes, and shrubs within the proposed fenced site.

1.2.2 Remove trees, and stumps, 2-inches in diameter or larger to a depth of 12-inches below existing ground surface. Cut major roots and pull trees and stumps. Remove trees under 2-inches in diameter, bushes and shrubs to a depth of 6-inches below existing ground surface. Pull or grub out stumps.

1.2.3 Chip wood and tree trunks. Deposit chips where shown or directed in 6-inch layers maximum and compact. Place and compact common fill material on top of chips.

2. WASTE REMOVAL

2.1 Clean along the river, pond and perimeter of the landfill property and as directed to remove solid waste. These wastes shall be picked up, reduced in volume and placed in low spots along with the other grubbed materials.

2.2 All metal drums containing liquid materials will be removed from the landfill surface area, perimeter and the bank areas. Storage and handling of these materials will be as described below under Hazardous Waste.

2.3 During the cleaning and grubbing operation, the Contractor shall collect exposed waste materials--such as empty barrels or drums, steel frames, vehicle bodies, and tires that will extend into the final cap "bottom" elevation. Metal and other objects will be reduced in volume, if appropriate. The material will then be placed in low spots within the landfill top area and covered with common fill material.

3. HAZARDOUS WASTE

3.1 In the event metal drums containing liquid material or obvious areas of spilled liquid are encountered, Contractor shall employ a minimum of Level C Protection and other protective measures as necessary. Level C and higher protection shall be paid by the man-hour under the payment items for "Additional Personnel Protection".

3.2 Existing drums containing liquids, or any obvious areas of spilled liquid substances or materials shall be treated as Hazardous Waste until demonstrated otherwise. Contractor shall characterize such drums or substances as required under 40 CFR parts 260 through 264.

3.3 Materials characterized as non hazardous waste shall be disposed of on site as directed by the Construction Engineer Representative. Non hazardous waste disposal shall be incidental to clearing and grubbing.

3.4 Hazardous Wastes shall be removed from the site in an approved manner and properly disposed of in a facility approved by the U.S. EPA or a state having authorization to manage the federal hazardous waste program under 40 CFR 270.

3.5 Waste characterization, temporary storage on site, handling, transportation and ultimate disposal, if required, will be paid for on a force account basis.

4. MEASUREMENT AND PAYMENT

Clearing shall be paid for under the payment items for "Clearing".

END OF SECTION 2A

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SITE WORK

SECTION 2B

DEMOLITION

SECTION 2B

DEMOLITION

1. DEMOLITION OF BUILDINGS

1.1 Remove existing walls, floors, footings, piers, slabs, and other construction of buildings or structures indicated to be demolished.

1.2 Remove existing walls and other obstructions to a depth of 12 inches below the lower of finished grade or the bottom of the Impervious cap.

1.3 Clean out to solid subgrade existing basements, cisterns, or drainage structures encountered within cap limits and fill with common fill to the grading elevations shown. Place common fill in 1-foot lifts. Compact to 90 percent of modified Proctor density.

1.4 Seal water and sewer services to septic tank as directed. Disconnect and remove utilities as required by the rules of the utility concerned. Protect the utilities during demolition.

1.5 Remove debris from existing basement floors, cisterns, or cesspools outside of building areas if constructed of masonry or concrete, and break up bottoms to provide drainage before any fill is placed over them.

1.6 Wells to be abandoned shall be abandoned in accordance with applicable Indiana Department on Natural Resources regulations and Section 2N, Wells of these Specifications.

2. PAVEMENT DEMOLITION

2.1 Remove existing pavement, including base and surface courses, stabilized sub-bases as required to construct new facilities or as shown. Provide for satisfactory transition between replaced pavement and the portions remaining in place. Saw a straight joint at least 1-1/2 inches deep between sidewalk and pavement removed and that left in place.

2.2 Determine the thickness of existing pavement, base, sub-base, and driveway pavement to be removed, and the extent to which they are reinforced. No additional compensation will be made because of variations from the assumed thickness or for variations in the amount of reinforcement.

2.3 Break into pieces not over 2 ft on any side existing pavements, curbs, and gutters that are to be removed and placed in embankments. Fill excavated space with material conforming to the specification for Base Course as described in these Specifications.

2.4 WATER AND DRAIN PIPING

2.4.1 Remove existing pond water intake structure, water line and drain line serving existing asphalt plant.

2.4.2 Although it is unlikely, the removal of these lines could lead to the uncovering buried waste. If this should occure, bury waste in common file area where new cap is to be installed.

3. RUBBLE FOR FILL

3.1 When indicated or directed by the Construction Engineer Representative, clean masonry, asphalt and concrete rubble resulting from demolition shall be used as common fill as described in these Specifications.

3.2 Rubble for fill to be mixed with common fill, with a maximum life of two foot, to prevent bridging of large pieces.

4. SALVAGE AND DISPOSAL

4.1 No materials or equipment shall be salvaged or removed from the site.

4.2 Dispose of all construction rubble and debris in areas designated.

5. MEASUREMENT AND PAYMENT

Demolition shall be paid for under the payment item for "Demolition."

END OF SECTION 2B

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SECTION 2C

EARTHWORK

SECTION 2C

EARTHWORK

1. PROTECTION OF PROPERTY

1.1 Arrange with all persons, firms, or corporations owning or using poles, pipes, tracks, conduits, or similar facilities affected by construction. The Contractor to maintain and protect them during construction.

1.2 If existing gas or water pipes, buried electrical, telephone, and telegraph ducts, conduits, sewers, drains, or poles are blocked or interfered with by the excavation required on this project, maintain them in continuous operation and restore them to their original condition.

1.3 Protect exposed solid waste from disturbance by excavating machinery with temporary enclosures or other methods approved by Construction Engineer Representative.

1.4 General

1.4.1 Excavation includes removal of quicksand, hardpan, boulders, clay, rubbish, unforeseen obstacles, underground conduits, pipe, drain tile, trees, roots, timber or masonry structures, railroad tracks, pavements, sidewalks and other obstacles encountered. No claim for additional payment will be accepted because of the character of the ground in which the excavation is made. Excavation will be unclassified unless otherwise designated in the Contract Documents.

1.4.2 Seal abandoned pipelines cut during excavation at both cut ends with Class C concrete.

1.4.3 Employ qualified professional engineer or surveyor to lay out the work and for other job conditions requiring skilled technical knowledge.

1.5 GROUP's Quality Control Testing

1.5.1 GROUP shall employ an independent testing laboratory to secure representative samples and to perform quality control tests on all soil materials as specified herein.

1.5.2 Soil tests, as required herein, shall be performed to the following standards:

Type of Test	Test Method
Pollutants	Standard Methods as approved by U.S. EPA
Classification of Soils for Engineering Purposes	ASTM D-2487
Gradation (Including hydrometer)	ASTM D-422
Moisture Content	ASTM D-2216
Liquid Limit	ASTM D-423
Plastic Limit	ASTM D-424
Moisture-Density Curve	ASTM D-1557
Density of Soil, in place	ASTM D-1556 or ASTM D-2167
Density of Soil, in place, by	ASTM D-2922

Nuclear Methods (Shallow depth)	
Lab Permeability (Triaxial Cell Method)	U.S. Army Corps of Engineers Manual, EM-1110-2-1906, Appendix VII, "Permeability Tests"

1.5.3 Pollutant test shall include analysis for Priority Pollutants.

1.5.4 Soil samples shall be taken and analyzed at the intervals specified below.

1.5.5 Contractor shall provide the GROUP 30 days notice prior to excavating any material for eventual transport to the Site, and shall in no way obstruct or interfere with the work of the Testing Laboratory.

2. ROUGH GRADING

Grade the project site as shown on the Plans or directed by the Construction Engineer Representative. Do not disturb the existing landfill surface. Do not disturb or damage underground construction such as sewers, drainage pipes, or drainage structures.

2.1 Rough grade as follows:

2.1.1 Grade areas under impervious cap to the lines and elevations shown on the plans or as required by the Construction Engineer Representative. Maximum roughness, measured with a 20-foot straight edge shall be six inches.

2.1.2 Grade areas to be landscaped to 6-inches below finished grade.

2.2 Confine construction traffic to designated routes away from areas to be landscaped.

2.3 In areas rutted by traffic or eroded by water, regrade, compact, and restore to established rough grade.

3. COMMON FILL

3.1 General

3.1.1 Provide common fill to lines and grades shown on plans or as directed by Construction Engineer Representative.

3.1.2 Where solid waste is exposed on the surface, or where directed by the Construction Engineer Representative, place Common Fill by conveyor or spreading by track equipment to avoid vehicle traffic on solid waste material.

3.2 Material

3.2.1 Common Fill shall be soil, rock, pit run gravel, and only on-site, masonry rubble, concrete rubble, or other material capable of being compacted into a compact mass.

3.2.2 Brush, tree stumps, wood scrap, or other organic waste, peat, organic soils muck, asphalt, or other material which, in the Construction Engineer Representative's judgement, cannot be adequately compacted, will not be included as Common Fill.

3.2.3 Rocks and other particles larger than 12-inches in diameter shall not be included.

3.2.4 The top two feet of common fill will contain no particles larger than six inches in diameter.

3.3 Placement

3.3.1 Place Common Fill in areas shown on plans or where directed by Construction Engineer Representative. Fill shall be placed in lifts of not more than two feet. The final 18-inches of common fill shall be placed in lifts not exceeding 9 inches.

3.3.2 Do not place fill material in water, on frozen ground, or on other surfaces not approved by Construction Engineer Representative.

3.3.3 Compact each layer, using approved means, to a minimum of 90 percent of maximum laborator density, as determined by modified Proctor Test.

3.4 Quality Control Testing

3.4.1 Frequency

Type of Test	Minimum Frequency
Moisture Content	1 test / 10,000 cu. yd.
Moisture Density Curve	1 test / 10,000 cu. yd.
Moisture & Density Tests after placement	1 test / 10,000 cu. yd.

3.4.2 Tests for Pollutants shall be performed by GROUP at their discretion prior to acceptance of fill material. One test per 10,000 cubic yards of common fill may be performed. Contractor shall notify Construction Engineer Representative at least 30 working days in advance of common fill excavation, to permit collection and analysis of samples.

3.4.3 Quality control tests shall be performed at locations designated by Construction Engineer Representative.

4. IMPERVIOUS CAP

4.1 General

4.1.1 Construct impervious cap to the lines and grades shown on the plans.

4.1.2 Impervious cap shall be a minimum of two feet in thickness, be compacted to a minimum of 95 percent of maximum Proctor density, and shall have a maximum permeability of 1.0E-6 cm/sec. Construction Engineer Representative shall direct that samples from the completed cap be tested for permeability. Contractor shall seal test holes with a commercial sodium bentonite sealant such as Volclay Grout as produced by American Colloid Co., Benseal as produced by the NL Baroid Co., or equal. Submit manufacturer's data and sample to Construction Engineer Representative for review.

4.1.3 Where solid waste is exposed on the surface, or where directed by the Construction Engineer Representative, place Impervious Cap material by conveyor or spreading by track equipment to avoid vehicle traffic on solid waste material.

4.2 Material

4.2.1 Impervious cap material shall be obtained from the GROUP. Refer to Appendix A for soils exploration and testing data.

4.2.2 Borrow pit location is indicated on the Plans, Sheet 1 along with a suggested haul route. Contractor to provide trucks and transport clay material from borrow pit location to project site.

4.2.3 Impervious cap material shall be inorganic clay, sandy clay, or silty clay corresponding to USC groups CL.

4.2.4 Contractor shall examine the soils testing data and make his own determination of his capability to achieve the required compaction and permeability.

4.2.5 The moisture content of the in situ material may require adjustment as described herein to achieve the required density and permeability. Contractor shall make his own determination of the suitability of the materials and methods required. The pay items shall constitute the entire compensation for any required adjustments.

4.2.6 Cap material shall be free of refuse, stumps, large roots, stones over 2 inches diameter, brush, or other deleterious material. Where more than one stratum is to be excavated for borrow, order the excavation so that a homogeneous mixture of the strata is achieved.

4.3 Placement

4.3.1 A test pad, having dimensions of 100 feet long by 100 feet wide shall be placed and compacted using the propsed impervious soils and construction methods prior to commencing the cap construction. A minimum of five tests for density of soil, in place, and moisture content will be taken. A minimum of three undisturbed samples shall be taken and analyzed for lab permeability (triaxial cell method). Certified test results shall be submitted to the Construction Engineer Representative for approval before commencing construction. Approval shall be received from the Construction Engineer Representative and before construction.

4.3.2 Place cap material in layers over the entire length and width of the cap in layers not more than 8-inches thick, loose measure. Where a tamping roller is used, the loose depth of each lift shall not exceed the length of the tamper feet. The surface area of each foot of the tamping roller shall be no less than 5.5 square inches.

4.3.3 Disk each layer before rolling to break up clumps and clods, and achieve thorough mixing of the cap material.

4.3.4 Do not place cap material in water, on frozen ground, or on other surfaces not approved by Construction Engineer Representative.

4.3.5 Compact each layer to at least 90 percent of modified Proctor density.

4.4 Moisture Content

4.4.1 Place impervious cap material with a moisture content not less than 95 percent, nor more than 104 percent by weight of optimum moisture content.

4.4.2 If the cap material is too dry, add water by sprinkling, followed by disking.

4.4.3 If the cap material is too wet, aerate the material by disking or other means, to remove excess moisture.

4.4.4 Adjustment of moisture content is incidental to placement of the Impervious Cap.

4.5 Quality Control Testing

4.5.1 Frequency

Type of Test	Minimum Frequency Of Test
Classification of Soils for Engineering Purposes	1 test / 5,000 cu. yd.
Gradation (including hydrometer)	1 test / 5,000 cu. yd.
Moisture Content	1 test / 5,000 cu. yd.
Liquid Limit	1 test / 5,000 cu. yd.
Plastic Limit	1 test / 5,000 cu. yd.
Moisture Density Curve	1 test / 5,000 cu. yd.
Lab Permeability from undisturbed samples after placement (Triaxial cell method)	1 test / acre / lift
Density Tests of soils in place	5 tests / acre / lift

4.5.2 Tests for pollutants may be performed by GROUP at their discretion prior to acceptance of impervious cap material. One test per 10,000 cubic yards of impervious cap may be performed. Contractor shall notify Construction Engineer Representative at least 14 working days in advance of impervious cap placement to permit collection and analysis of samples.

4.5.3 Quality control tests shall be performed at locations designated by Construction Engineer Representative.

5. TOPSOIL

5.1 Topsoil material shall be obtained by the Contractor, transported to project site and placed.

5.2 Place topsoil where shown on plans. Topsoil shall be placed to a thickness of not less than eight inches, loose measure.

5.3 Topsoil shall consist of loose, friable soil, free of refuse, stumps, large roots, stones over 2-inches in diameter, brush, weeds, or other material which would be determined to be detrimental to proper development of vegetative growth. It shall be capable of supporting normal vegetation.

5.4 Topsoil shall not be taken from any source known to contain any of the noxious weeds defined in the Indiana State Seed Law.

5.5 Topsoil shall have a pH value of 6.2 to 7.4. Testing for pH value shall be performed in the field in accordance with Purdue University Agricultural Experiment Station Bulletin No. 635. Contractor may add agricultural limestone to topsoil if required to raise pH value to meet specifications.

5.6 Tests for Pollutants may be performed by GROUP at their discretion prior to acceptance of topsoil material. One test per 10,000 cubic yards of topsoil may be performed. Contractor shall notify Construction Engineer Representative at least 14 working days in advance of topsoil excavation, to permit collection and analysis of samples.

5.7 Topsoil shall not be placed until it is accepted by the Construction Engineer Representative.

6. FINISH GRADING

6.1 Finish grade the completed work area within the limits designated.

6.2 Do not commence finish grading until construction, fill, and Impervious Cap have been completed and approved.

6.3 Shaped earth shoulder areas, when compacted, shall be one inch below the adjacent pavement.

6.4 Grade areas to be planted, including lawns when compacted, to the elevations and grades shown.

6.5 Prior to landscaping operations, the landscaper shall inspect the fine grading and notify Contractor and Construction Engineer Representative.

6.6 Areas that have been finish graded shall be protected from construction traffic. Repair any area that has become rutted or has settled below the correct grade.

7. MEASUREMENT AND PAYMENT

7.1 Measurement

7.1.1 Impervious Cap shall be measured by the cubic yard based on quantities excavated from the borrow pit.

7.1.2 Common fill, furnished by Contractor, shall be measured by the cubic yard based on quantities as compacted and complete in-place and rough graded.

7.1.3 Topsoil, furnished by Contractor, shall be measured by the cubic yard based on quantities as compacted and complete in-place and finish graded.

7.1.4 Construction Engineer Representative shall survey the pit areas before and after construction, and at such intervals as he deems appropriate.

7.1.5 Payment quantities shall be calculated on the basis of Average End Area Method using cross sections at intervals deemed appropriate by the Construction Engineer Representative.

7.1.6 Quantities for intermediate payments may be calculated based on the number and volume of truck loads delivered, but final quantities shall be calculated as above.

7.1.7 Contractor shall provide Construction Engineer Representative with 5 working days notice prior to beginning any excavation, to permit the required surveys to be made.

7.2 Payment

7.2.1 Common Fill, Impervious Cap and Topsoil shall be paid for at the unit prices item for the corresponding payment items for earthwork.

7.2.2 Excavation, hauling, trucking, loading, unloading, placement, moisture adjustment, rough grading prior to placement of common fill, rough and finish grading, compaction, and all other associated work shall be incidental to the corresponding payment items.

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SECTION 2H

SITE DRAINAGE

SECTION 2H
SITE DRAINAGE

1. EROSION CONTROL

1.1 General

Furnish and install erosion control material on the areas shown or where directed by Construction Engineer Representative.

1.2 Materials

1.2.1 Erosion Control Matting

1.2.1.1 Erosion Control Matting (ECM) shall be geotextile fabric composed of Nylon 6 monofilaments fused at their intersections to form a 3-dimensional matrix designed for erosion control and earth reinforcement applications. ECM shall be ENKAMAT 7020, as manufactured by Akzo Industrial Systems Company, Asheville, NC, or equal.

1.2.1.2 Furnish in standard rolls, 36-48 inches wide.

1.2.1.3 Physical Properties

Property	Minimum Valve
Filament Thickness	0.016 inches
Fabric Thickness	0.750 inches
Fabric Weight	11 oz/sq. yd.
Tensile Strength (Length)	94 lbs/ft
Tensile Strength (Width)	54 lbs/ft
Tensile Elongation (Length)	25 percent
Tensile Elongation (Width)	25 percent

1.2.1.4 Stakes for ECM shall be 12-inch long stakes sawn from 1 x 3-inch nominal size lumber. Use longer stakes where required for the stability of the ECM or where directed by the Construction Engineer Representative. Cut diagonals across board flats to produce triangular configuration. Lumber shall be pressure treated with a U.S. EPA approved preservative.

1.2.2 Siltation Control Fence (Siltation Barrier)

1.2.2.1 Fabric considered for use under this provision shall consist of woven or nonwoven filaments of polypropylene, polyester or polyethylene. Nonwoven fabric may be needle punched heat-bonded, resin-bonded or combination thereof. The filaments must be dimensionally stable (i.e., to each other) and resistant to delamination. The filaments must be free from any chemical treatment or coating that might significantly reduce porosity and permeability. However, the fabric shall be resistant to ultraviolet radiation.

1.2.2.2 The fabric shall comply with the following physical properties.

Width (ft.) -	3.5 min.	
Weight (oz./sq. yd.) -	4.0 min.	ASTM D 37716
Grab Tensile Strength (lbs.)	200 min.	ASTM D 4632
Grab Elongation at break (percent)	15 min.	ASTM D 4632
Burst Strength, (psi)	250 min.	ASTM D 3786
Equivalent Opening Size (EOS) Sieve No.	30 min. (nonwoven)	Corps of Engrs
	50 min. (woven)	CW-02215

1.2.2.3 The fabric shall be tested wet in both warp and fill directions in accordance with ASTM D 1682, Grab Tests using a 4-inch by 8-inch sample, 3-inch gage length, clamped in a 1-inch wide by 2-inch wide long grip, tested at a strain rate of 12-inch/minute in a CRE testing machine. The average of five tests in each direction shall meet the minimum value given above.

1.2.2.4 Submit manufacturer's certification that fabric meets the minimum values listed above.

1.2.2.5 At the end of construction, or as directed, remove the silt fence from around the on-site pond and dispose of in a licensed facility or as directed. Silt fence at the site perimeter shall remain.

1.2.3 Jute Matting

Jute matting shall be a uniform open plain weave of single yarn. The yarn shall be loosely twisted and not vary in thickness by more than half its normal diameter. The matting shall have an average weight of 1.22 lbs/yard, + or -5 percent. Matting shall not be dyed, bleached, or otherwise treated so as to be toxic to vegetation.

1.3 Erosion Control Matting

1.3.1 Erosion control matting shall be installed by experienced workmen in accordance with Manufacturer's instructions or as shown on the Plans.

1.3.2 Grade surface of finished areas so that ground is smooth and compact. Remove all rock, dirt clods, tree stumps, tire ruts, and other obstructions which will prevent ECM from lying in direct contact with soil surfae. Complete fine grading and top soil operation prior to placing ECM.

1.3.3 Begin placing ECM at downstream edge. Each successive roll shall overlap the preceeding roll by 4-inches.

1.3.4 Where ECM is employed in ditches, and as directed by Construction Engineer Representative, dig 8-inch deep by 8-inch wide triangular check slots, transverse to the mat at 25 foot intervals.

1.3.5 Begin by constructing up-slope terminal as shown in plans. Do not proceed down slope at this stage. Stake ECM into slot. Brace against vertical edge with 1 x 3-inch pressure treated board for full transverse length. Backfill and compact trench.

1.3.6 Overlay backfill with ECM and run vertically downslope, starting at downstream edge. Each successive roll shall overlap by 4-inches. Secure with stakes at 5-foot intervals. Stakes shall be oriented broadside to slope with straight edge of stake at 1-inch distance from ECM overlap edge along seam.

1.3.7 Overlay terminal to achieve double layer of ECM at terminal. Stake ECM to anchor terminal.

1.3.8 Construct downstream terminal as shown, laying a 5 foot apron of ECM upslope from terminal. Lay ECM downslope over terminal. Stake down ECM overlay.

1.3.9 Place grass seed and fertilizer as required, after placement of ECM. Seeding operation shall not disturb ECM.

1.4 Jute Matting

1.4.1 Place matting where earth slopes, 6 percent or steeper slope, or where directed, immediately after the earth surface has been prepared for seeding and seeding operation has been completed. Preserve the required line, grade, and cross section of the area.

1.4.2 Unroll matting in the direction of the flow of water, and apply without stretching so that it will lie smoothly but loosely on the surface. Bury the up-channel or top of slope end of each piece in a narrow trench, at least 5 inches deep, fill the trench, and tamp firmly. Where one roll of matting ends and a second begins, bring the end of the upper roll over the buried end of the second roll so that there will be a 4 to 6-inch overlap.

1.4.3 Construct check slots at each 50 feet longitudinally. The slots shall be narrow trenches at least 5 inches deep. Fold over the matting and bury to the full depth of the trench, then close the trench and tamp firmly. Matting laid side by side shall overlap by at least 4 inches.

1.4.4 Place staples across matting at ends, junctions, and check slots spaced approximately 10 inches apart. Place staples along the outer edges and down the center of each strip of matting about 3 ft apart, and along all lapped edges 24 to 36 inches apart.

1.4.5 After installation, roll with an approved roller to assure contact with the soil.

1.4.6 For matting installed on cut or fill slopes, adjustments in trenching or stapling to fit slope conditions may be required.

1.5 Straw Cover

Straw cover or straw bales shall be prohibited.

1.6 Control Fence (Siltation Barrier)

1.6.1 The siltation control fence shall be delivered to the job site in such a manner as to facilitate handling and incorporation into the work without damage. In no case shall the fabric be stored or exposed to direct sunlight that might significantly diminish its strength or toughness prior to its intended use as a silt fence. The fabric shall be resistant to ultraviolet radiation for the duration of the construction project.

1.6.2 Installation

1.6.2.1 On site perimeter, fasten silt fence to inside

face of chain link fence with cord or wire. Prove 2 x 2-inch treated timber or galvanized metal slats approximately 36-inches long spaced about 5-feet apart in front of fence for attachment to chain link fence.

1.6.2.2 Where no chain link fence is installed and around on site pond, 6-foot lengths of treated 2 x 4-inch timber or galvanized metal posts spaced at about 5-feet shall be installed. The timber or metal post shall be set in previously dug holes and backfilled to form a stable support for the fabric, or may be driven provided they are protected by a suitable driving cap and no damage is done to any portion of the post. The posts shall be set plumb to the required depth and alignment with adequate lateral stability. The fabric shall first be attached to the posts by any applicable means. Metal staples or nails can be used to attach the fabric to wooden posts.

1.6.2.3 A small trench of about 6-inch width and 6-inch depth shall then be excavated on the upstream side of the silts fence to bury and anchor the lower portion of the fabric. With the minimum width of the fabric 3.5-feet, about 12-inches shall be buried in the trench and then backfilled with natural material, tamping the backfill to provide good anchorage and prevent surface water runoff from undermining the fence.

1.6.3 The siltation control fence shall be satisfactorily maintained so as to keep it functioning during the life of the project. This shall include removal of trapped sediment and cleaning the fabric of trapped sediment.

2. MEASUREMENT & PAYMENT

2.1 Measurement

2.1.1 Erosion control matting and Jute matting shall be measured in square yards as installed.

2.1.2 Siltation control fence shall be measured in lineal feet of fencing actually installed.

2.2 Payment

2.2.1 Erosion Control Matting, Siltation Control Fence, and Jute Matting shall be paid under the corresponding payment items for Site Drainage.

2.2.2 Stakes, staples, fence posts, lumber, and all other related items shall be incidental to construction.

END OF SECTION 2H

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SITE WORK

SECTION 2I

GRAVEL PAVEMENTS

SECTION 2I

GRAVEL PAVEMENTS

1. GENERAL

Construct the pavements, pavement drainage, and appurtenances required for this project.

2. MATERIALS

2.1 Subgrade shall be native material or suitable fill conforming to the specification for excavation in Section 2C.

2.2 Aggregate for base course, aggregate shouldering or surface course shall be gravel, crushed gravel, or crushed stone Class "A", No. 73 coarse aggregate with gradation conforming to the Indiana Standard Specifications for highway construction.

2.3 Geotextile Fabric

2.3.1 Geotextile fabric shall be woven soil stabilization fabric equivalent to Mirafi 600X as manufactured by Mirafi Inc., Charlotte, NC, or equal.

2.3.2 Fabric width shall be minimum width of 12-feet.

2.3.3 Typical Fabric Properties

Fabric Property	Test Method	Min. Value
Grab tensile strength	ASTM D-4632-86	200 lb
Grab tensile elongation at break	ASTM D-4632-86	15 percent
Burst strength	ASTM D-3786-87	250 psi
Trapezoid tear strength	ASTM D-4522-85	75 lb
Puncture resistance	ASTM D-3787-80	100 lb
Minimum weight	-	8 oz/sq. yard

2.3.4 Test results may be obtained by manufacturers certification.

2.3.5 Fabric shall be delivered to the job site in such a manner as to facilitate handling and incorporation into the work without damage. Material shall be stored in such a manner as to prevent exposure to direct sunlight and damage by other construction activities.

3. PAVEMENTS

3.1 General

3.1.1 Pavement work shall be performed by experienced personnel and shall comply with Indiana standard specifications for highway construction for all work not covered herein.

3.1.2 Pavement thickness will be measured and if found deficient it may be paid for at an adjusted price, or the pavement shall be removed and replaced.

3.2 Installation of Fabric

3.2.1 Prior to the installation of the fabric, the application surface shall be cleared of debris, sharp objects and trees. Tree stumps shall be cut to the level of the ground surface. If the stumps cannot be cut to the ground level, they shall be completely removed. In the case of subgrades, all wheel tracks or ruts in excess of three (3) inches in depth shall be graded smooth or otherwise filled with soil to provide a reasonably smooth surface.

3.2.2 Fabric may be installed on the application surface either by hand or mechanical methods, provided that the fabric is not torn or the surface rutted.

3.2.3 Fabric of insufficient width or length to fully cover the specified area shall be lapped, or sewn. The following are minimum laps for each:

1) Lap only - 24-inches

2) Sewn - 4-inches

3.2.4 If sewn, the seam strength shall be equal or more than the minimum grab tensile strength of the fabric when tested wet.

3.3 Gravel Pavement

3.3.1 Construct to the thickness noted in layers not more than 4 inches (compacted) thick. If subgrade material is worked into the base during compaction or finishing, remove the base material over the area and replace with new aggregate.

3.3.2 Placement of material on the fabric shall be accomplished by spreading dumped material off of previously placed material with a bulldozer blade or end-loader, in such a manner as to prevent tearing or shoving of the cloth. Dumping of material directly on the fabric will only be permitted to establish an initial working platform. No vehicles or construction equipment shall be allowed on the fabric prior to placement of the granular blanket.

3.3.3 Unless otherwise specified in the plans or special provisions, the granular material shall be placed to the full required thickness and compacted to the satisfaction of the Engineer before any loaded trucks are allowed on the blanket.

3.3.4 Fabric which is damaged during installation or subsequent placement of granular material, due to failure of the Contractor to comply with these provisions, shall be repaired or replaced at his expense, including costs of removal and replacement of the granular material.

3.3.5 Torn fabric may be patched in-place by cutting and placing a piece of the same fabric over the tear. The dimensions of the patch shall be at least two (2) feet larger then the largest dimension of the tear, and it shall be weighted or otherwise secured to prevent the granular material from causing lap separation.

3.3.6 Compact each layer with a power driven roller with the aid of water. Before mixing and spreading base material, the moisture content shall be sufficient to prevent segregation into pockets of fine and coarse material and to permit satisfactory compaction. Add water as required.

4. MEASUREMENT AND PAYMENT

Gravel pavements including geotextile fabric shall be measured in place and paid for per square yard under the payment item "Gravel Pavements."

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SECTION 2K

SITE IMPROVEMENTS

SECTION 2K

SITE IMPROVEMENTS

1. CHAIN LINK FENCE

1.1 General

1.1.1 Furnish and install new chain link fencing and gates at the locations indicated. Fence fabric shall be six feet high.

1.1.2 Submit shop drawings showing details of fence fabric, posts, rails, gates, fittings, and locking devices. Submit certification of test results when requested.

1.1.3 Painting of chain link fencing will not be required.

1.2 Galvanized Fencing

1.2.1 Fence fabric shall be No. 9 steel wire, hot galvanized after weaving, and woven in a 2-inch chain link pattern with bottom and top selvages twisted and barbed. Wire shall have a minimum breaking strength of 1,200 lbs. Wire fabric shall withstand six one-minute immersions under the Preece copper sulphate method of testing for uniformity and weight of coating.

1.2.2 Framework shall be hot-dipped galvanized with a minimum coating of 2 ounces/sf, or one ounce/sf plus 30 micrograms/square inch chromate conversion coating.

1.2.3 Line posts shall be 2.25 x 1.70-inch formed C-section, ASTM A570 Grade 45 steel, 2.6 lbs/ft; or 1.25-inch outside diameter round post, ASTM A569, cold rolled steel with a minimum 50,000 psi yield strength, 2.27 lbs/ft.

1.2.4 End corner, angle, and pull posts shall be 3.50 x 3.50-inch formed C-section, ASTM A570 Grade 45 steel, 4.85 lbs/ft; or 2.00-inch round post, ASTM A569, 3.65 lbs/ft.

1.2.5 Fabric ties shall be hog rings, galvanized steel wire not less than 9-ga with a zinc coating of not less than 1.2 ounces/sf.

1.2.6 Bolts and nuts shall be in conformance with ASTM A307 and shall be galvanized in accordance with AASHTO M232.

1.2.7 Install horizontal braces fabricated of 1-5/8-inch, 2.27-lb copper bearing steel pipe at all corner, gate, and end posts.

1.2.8 Gates shall be sized and located as shown. Swing gate posts for double gates shall be 3.5-inch, 7.58 lb/ft. Gate frames shall be made of 1.66 outside diameter, 2.27 lbs/ft hot-dipped galvanized pipe. Corner fittings shall be heavy malleable iron castings. Fabric shall be the same as for the fence. Gates shall have malleable iron ball and socket hinges, catches, stops, and padlocks with 3 keys each. Posts for single gates shall be the same as end posts.

1.2.9 All round line posts, terminal posts, and gate posts shall be provided with cast aluminum post cap, press fit in place.

1.2.10 Tension wire shall be 7-ga galvanized spring coil or crimped steel wire.

1.3 Installation

1.3.1 Install chain link fence in accordance with the directions of the manufacturer and these Specifications.

1.3.2 Install fence posts at not more than 10-ft centers and at least 36 inches into the ground in a Class B concrete base. Allow concrete to cure for at least 7 days before erecting remainder of fence. Fasten fabric to line posts with wire ties spaced about 14 inches apart and to top rail spaced about 24 inches apart.

1.3.3 Tension wires shall be placed stretched taut and secured at the ends and to all posts in a satisfactory manner before the fabric is installed.

1.3.4 Use standard chain link fence stretching equipment to stretch the fabric before tying it to the tension wires and posts. Repeat the stretching and tieing operations about every 100 feet.

1.3.5 Erect gates so they swing or slide in the direction indicated. Provide gate stops. Secure hardware, adjust, and leave in perfect working order. Adjust hinges and diagonal bracing so that gates will hang level. Adjust rollers and guides of sliding gates so that gates are level.

1.3.6 At small natural or drainage ditches where it is not practical for the fence to conform to the contour of the ground, span the opening below the fence with barbed wire fastened to stakes of required length. The finished fence shall be plumb, taut, true to line and ground contour, and complete in every detail. When directed, stake down the chain link fence at several points between posts.

1.3.7 Where new fence joins an existing fence, set a corner post and brace post at the junction and brace. If the connection is made at other than the corner of the new fence the last span of the old fence shall contain a brace.

1.3.8 Install grounding of fence and gates.

2. SIGNS

2.1 General

2.1.1 Furnish and install signs of the type and legend and at the locations shown.

2.1.2 Submit shop drawings showing legend characters and spacing and fabrication details.

2.2 Materials

2.2.1 Aluminum sign blanks, ASTM B209.

2.2.2 Paint for sign faces, weather resistant enamel, FS TT-E-489, Class A and B.

2.3 Cleaning And Painting

2.3.1 Aluminum sign panels to be painted shall be cleaned and treated with a chromate type chemical conversion treatment in accordance with ASTM B449. The chemicals or solvents for cleaning or treating the metal shall be applied in accordance with the directions of the manufacturer.

2.3.2 The surfaces of signs shall be cleaned before painting. Solvents or cleaners shall not harm the surface if the metal has been previously treated. After treatment and

cleaning, sign base material shall not be handled except by device or clean canvas gloves until after application of
45 sign face material.

2.3.3 Signs which are to be painted, with or without
46 legend, shall be painted on the face side only.

2.3.4 Metal signs shall receive a thin coat of the appropriate primer before application of an enamel finish coat. Primer shall be applied by spray method at a uniform thick-
47 ness of 0.3-0.5 mil.

2.3.5 Finish coat enamel shall be applied by spraying to produce a dry film thickness not less than one mil. Baking procedures shall produce a film hardness equal to values
48 given in the appropriate paint specifications.

2.3.6 Painted legends shall be baked as required for background color. The finished design shall be clearcut and sharp, the lines of letters and details true, regular, and free from waviness, unevenness, furry edges, or lines. The signs shall be free from cracking, scaling, pitting, blis-
49 tering, and blemishes of any kind.

2.3.7 Mount signs to fence fabric with stainless steel bolts, washers, and selflocking nuts conforming to ASTM
50 A276.

51 2.3.8 Use fibre washers between boltheads and sign faces.

2.3.9 Signs that are warped or bent, or that have blistered, cracked, chipped, or alligatored paint, or have blurred, smeared, or poorly lettered legends shall be
52 replaced.

53 3. CHAIN LINK FENCE REMOVAL

3.1 Where indicated, remove existing chain link fence. Remove concrete from fence posts. Spool barbed wire. Deliver all fence materials and lay flat for disposal on the site in common fill
54 area.

3.2 Additional fencing installed by Contractor for security or protection of his operation shall be removed prior to final
55 acceptance.

3.2.1 Steam clean fence material to remove any pollutant
56 residue prior to removal from site.

57 3.3 Fill, dress, and seed post holes.

58 4. MEASUREMENT AND PAYMENT

59 4.1 Measurement

4.1.1 Fencing shall be measured by the lineal foot, after installation. Measurement shall exclude openings for gates and other openings in fence. Posts pull posts, tension
60 wires, signs and other associated work shall be incidental.

4.1.2 Vehicle and personnel gates shall be measured by
61 count according to the type of gate installed.

62 4.1.3 Signs will be measured by count.

4.2 Payment

4.2.1 Fencing, gates and signs shall be paid for under the appropriate payment items, for site improvements.

4.2.2 Removal of existing chain link fence and posts shall be incidental to construction of fencing.

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SECTION 2L

LANDSCAPING

SECTION 2L
LANDSCAPING

1. GENERAL

1.1 Furnish, install, and maintain the landscaping materials required for this project.

1.2 Obtain all permits and certificates of inspection that may be required by federal, state, and local authorities.

1.3 Landscaping work shall be performed by a recognized person, company, or organization well established and experienced in this field and whose equipment and personnel are adequate to perform the required work. Obtain Construction Engineer Representative approval before starting any landscape work. Before beginning operations the landscaper shall inspect the fine grading and notify Contractor and Construction Engineer Representative, of problems with topsoil material and installation, fine grading and installation of erosion control matting or Jute matting.

2. TREES AND SHRUBS

2.1 General

2.1.1 Excavate plant pits and perform other planting operations within the planting season when weather and construction conditions will permit. The spring planting season for trees, shrubs, evergreens, and ground cover shall be from as early as the ground can be worked and continue until June 1. The fall season for trees and shrubs, unless otherwise noted, shall begin about September 15 and extend to November 30 or as long as weather conditions permit safe moving of plants. The fall planting season for evergreens and ground cover shall begin about August 15 and continue to not later than October 1. Plant bare root plants, if approved or specified, only when the air temperature exceeds 35F.

2.1.2 Stake the location of individual plants and the general outline of shrub and ground cover beds and obtain approval before planting.

2.1.3 If rock or underground construction work or obstructions are encountered in any plant pit, alternate locations may be selected by Construction Engineer Representative. Where locations cannot be changed, remove the obstruction to a depth of not less than 3 ft below grade and no less than 6 inches below bottom of ball or roots when plant is set at the required grade.

2.1.4 Furnish written instructions for maintaining the landscaping at least 10 days before completing the work.

2.2 Materials

2.2.1 Plants shall be healthy representatives of their normal species or variety. Names of plants conform to those in "Standardized Plant Names", 1942 edition, prepared by the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform generally with names accepted in the nursery trade. Substitutions will not be permitted without written authorization of Construction Engineer Representative.

2.2.2 Plants shall be freshly dug nursery stock, previously transplanted or root pruned, with well furnished symmetrical branch systems and vigorous normal root systems. Plants shall be free of insects, pests, disease, sun scalds, and

fresh abrasions. Plant material shall comply with state and federal laws with respect to inspection for plant diseases and insect infestation. Thin, weak plants are not acceptable. Plants shall show normal health and vigor.

2.2.3 Measure plants before pruning, with branches in normal position. Evergreen plants shall be foliaged to the ground. Measure the caliper of tree trunks 6 inches above the ground for 4-inch and smaller caliper trees, and 12 inches above the ground for larger trees.

2.2.4 Plants furnished shall have been grown under climatic conditions similar to those of the area in which the project is located.

2.2.5 Unless otherwise noted, plants shall be furnished in cans, tubs, or boxes.

2.2.6 Plant material shall be available for inspection in the growing nurseries by Construction Engineer Representative before digging. Final inspection will be made at the planting site. Material not acceptable upon delivery shall be removed and replaced with acceptable material.

2.2.7 Handle plants so the balls, roots, and foliage are protected. Use anti-transparent spray when required for protection as directed by the manufacturer.

2.2.8 Planting soil mixture shall consist of 5 parts by volume of topsoil, one part manure, one part sand, and 5 lbs bone meal per cy of the soil mixture.

2.2.9 Manure shall be well rotted cattle or horse manure, unleached, free of foreign matter and harmful chemicals, and 8-24 months old.

2.2.10 Mulch material shall consist of dried corn cobs of good quality and free of objectionable material.

2.2.11 Water to be pumped from on site pond. Provide a portable water pump to adequate supply of water during planting and for the maintenance period.

2.2.12 Materials for staking and wrapping trees shall be as follows:

2.2.12.1 Wire for fastening trees to stakes, 12-ga pliable, galvanized iron.

2.2.12.2 Hose to encase wires, new 2-ply reinforced rubber hose not less than 1/2-inch diameter.

2.2.12.3 Stakes for supporting trees, nominal 2-inch square or 2-1/2-inch round, sound wood, treated with creosote or other approved wood preservative.

2.2.12.4 Wrapping materials for tree trunks, standard burlap or heavy crepe paper in strips 6-10 inches wide.

2.2.13 Peat moss shall be partially decomposed fibrous or cellular stems and leaves of any species of sphagnum mosses free from decomposed collodial residue, wood, sulfur, and iron. Peat moss shall be delivered to the site in bales approximately 6 cf each.

2.3 Planting

2.3.1 Planting pits for trees shall be minimum 4 ft in diameter or the diameter of the ball plus 2 ft and at least 6 inches deeper than the ball.

2.3.2 Planting pits for evergreens and specimen shrubs shall be 6 inches deeper than the ball depth or a minimum 18

inches, and the pit diameter shall be 18 inches greater than the ball or a minimum 30 inches.

2.3.3 Place planting soil mixture in the bottom of the pits so plants will be at proper grade when placed. Set plants plumb and to a depth approximately 1-1/2 inches lower than originally planted in the nursery.

2.3.4 After the plants are set, fill the pits 3/4 full with planting soil mixture and fill with water to the top. After the water is absorbed, fill the remainder of the pit with dry planting soil to form a shallow saucer at grade.

2.3.5 Water the surface of plant saucers thoroughly immediately before placing mulch. Cover plant pits with mulch to the thickness indicated, and rake to a smooth even surface.

2.3.6 Prune tops of plants by removing approximately 1/3 of the branches in a manner characteristic of the species.

2.3.7 Wrap the trunks of deciduous trees from the ground line to the height of the second branches immediately after planting.

2.3.8 Support trees by staking and wiring as indicated on the Drawings immediately after planting. Trees shall be plumb after staking.

2.3.9 Promptly remove soil, manure, or other material and debris spilled on paved areas, walks, and drives.

2.4 Maintenance

Protect and maintain plantings for a period of 90 days of growing season. Maintenance includes watering, weeding, cultivating, mulching, tightening and repairing of stakes, removing dead material, resetting plants to upright position, restoring plant saucers, and other necessary operations.

2.5 Guarantee

Guarantee plants for one year or for the duration of one full growing season, beginning after the last planting is complete. At the end of the guarantee period replace dead, unhealthy, or badly impaired plants with plants of the same kind and size as specified in the plant list.

3. LAWNS

3.1 General

3.1.1 Furnish, plant, and maintain seeding at locations designated.

3.1.2 All areas within the limits of finish grading or cap not occupied by permanent construction or other plantings shall be seeded and maintained as lawn areas. Areas outside the limits of finish grading that have been disturbed by construction operations shall be seeded and maintained as lawns, unless otherwise specified.

3.1.3 On site pond perimeter and other designated areas shall be seeded with Canary grass seed mixture below elevation of 795 feet and as shown on Plans.

3.1.4 Seeded 6 percent or steeper slopes shall be protected in accordance with the specification for erosion control in Section 2H.

3.2 Materials

3.2.1 Lawn grass seed, using a mixture of the four listed grass seeds, shall be fresh, clean, new crop seed sown at the following rates per acre:

Alta Fescue (or Kentucky 31 Fescue)	40 pounds
Perreneal Rye Grass	25 pounds
Kentucky Bluegrass	10 pounds
Annual Rye Grass	35 pounds

3.2.2 Canary grass seed, using a mixture of the three listed grass seeds, shall be fresh, clean, new crop seed, sown at the following rates per acre:

Reed Canary Grass	15 pounds
Tall Fescue	16 pounds
Birdsfoot Trefoil	4 pounds

3.2.3 Fertilizers shall conform to the state fertilizer laws. Commercial fertilizer for lawns shall be 10 percent nitrogen (1/2 organic, 1/2 inorganic), 8 percent phosphoric acid, and 6 percent potash and trace elements, or 10 percent nitrogen (1/2 organic, 1/2 inorganic), 6 percent phosphoric acid, and 4 percent potash and trace elements.

3.2.4 Superphosphate shall be a commercial preparation containing by weight a minimum of 20 percent available phosphoric acid.

3.3 Construction

3.3.1 After topsoil has been spread and final grades established in accordance with other Sections of the Specifications, fine grade the entire lawn area by discing or tilling to a depth of 4 inches. Then drag the area with a plank float to develop a smooth, even surface. Power equipment may be used for these operations, but hand tools shall be used in areas too small for power equipment.

3.3.2 Install Jute matting after seeding operation.

3.3.3 Seeding

3.3.3.1 Apply superphosphate at the rate 3.1 lbs/1,000 sf, commercial fertilizer at 2.5 lbs/1,000 sf, and peat moss at the rate of 3 bales per 1,000 sf. Work the superphosphate, fertilizer, and peat moss into the soil to a minimum depth of 4 inches.

3.3.3.2 Sow grass seed in two operations of equal amounts at right angles to each other. Sow only between April 15 and May 30 and between August 10 and September 10. Do not seed during high winds or when the ground surface is too wet for working.

3.3.3.3 Reed canary grass may be sprigged on 2-3 inch centers instead of seeding.

3.3.3.4 Lightly rake or drag seeded areas and then roll with a 200-lb roller.

3.3.3.5 After raking and rolling, water seeded areas with a fine spray until a uniform moisture depth of one inch has been obtained.

3.3.3.6 In lieu of mechanical application of seed and

fertilizer, hydraulic application may be used if the fertilizer and seed are applied in separate operations. The seed or fertilizer slurry shall be constantly agitated until pumped from the tank. Do not add seed to the water more than 4 hours before application.

3.4 Maintenance

3.4.1 Maintenance shall consist of watering, cutting, trimming the grass, and performing other work necessary to obtain a good stand of grass reasonably free of weeds or obnoxious grasses.

3.4.2 The maintenance period shall begin immediately after seeding operations are complete and continue for not less than 45 days, or until the lawn grass has been cut twice, and if necessary, until an acceptable stand of grass has been established. Grass cutting shall mean with a minimum of 1-inch of grass cut of the top of stand of grass with mower height set at 3-inches.

3.4.3 At the end of the maintenance period apply organic fertilizer containing 6 percent nitrogen and 2 percent phosphorous to lawn areas at the rate of 30 lbs/1,000 sf.

4. MEASUREMENT AND PAYMENTS

4.1 Measurement

4.1.1 Trees and shrubs shall be measured by count according to the species planted.

4.1.2 Grass shall be measured by the square yard based on surveys taken after planting.

4.2 Payment

Payment shall be made under the payment items for trees by species, shrubs by species, lawn grass and canary grass, under payment item "Landscaping".

END OF SECTION 2L

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SITE WORK

SECTION 2M

SURFACE RESTORATION

SECTION 2M

SURFACE RESTORATION

1. GENERAL

1.1 Pavements, sidewalks, driveways, curbs, gutters, shrubbery, trees, lawns, fences, poles and other property and surface structures removed or disturbed during or as a result of construction operations shall be restored to a condition equal in appearance and quality to that which existed before the work began. The surface of improvements shall be constructed of the same material and match in appearance the surface removed.

1.2 Surplus materials and tools and temporary structures shall be removed from the site. Dirt, rubbish, and excess earth from the excavation shall be removed and the construction site left clean and acceptable to GROUP at the earliest possible date.

1.3 Maintain restored facilities promptly and regularly for one year after the acceptance of the work. Maintenance shall apply only to items of materials and workmanship improperly installed under this Contract, and maintenance measures made necessary by ordinary wear and tear occasioned by traffic are not included. Repairs required because of unsatisfactory trench backfilling shall be promptly made.

1.4 Surface restoration shall be incidental to construction.

2. TEMPORARY SURFACE OVER TRENCHES

2.1 Where conduits are constructed under roadways, driveways, sidewalks, or other traveled surfaces, provide a temporary surface consisting of 6 inches of coarse aggregate over the top of the trench immediately after compaction has been completed. The temporary surface may be of cold patch material, if desired, to avoid repeated replacement of the coarse aggregate.

2.2 The top of the temporary surface shall be smooth and meet the grade of the adjacent undisturbed surface. Maintain the temporary surface until it is replaced by the street surface specified. Permanent restoration of street surface shall not be initiated until authorized by Resident Construction Representative. The temporary surfacing shall be placed over the entire width of the trench.

3. PAVED ROADWAYS

3.1 Portland Cement Concrete Pavement

3.1.1 Portland cement concrete pavements removed during construction shall be replaced with portland cement concrete with the same thickness as that removed, but not less than 8 inches. Concrete shall conform to the applicable provisions of these Specifications and shall have a compressive strength of 3,500 psi at 28 days.

3.1.2 Construction methods for concrete pavement shall conform to the current requirements of the Indiana state highway specifications for portland cement concrete pavement. Joints in the replacement surface shall conform to and match the joints in the adjacent pavement area.

3.2 Rigid Base Bituminous Concrete Pavement

3.2.1 Where the existing pavement surface is bituminous concrete and the base consists of a rigid material such as brick, portland cement concrete, soil cement, natural cement, or a combination of these materials, the base shall be replaced with 8 inches of portland cement concrete base course. Portland cement concrete shall conform to applicable provisions of these specifications and shall have a compressive strength of 3,500 psi at 28 days.

3.2.2 Construction methods for portland cement concrete base course shall conform to the current requirements of the state highway specifications for portland cement concrete base course.

3.2.3 The surface replacement shall consist of a bituminous prime coat and a 3-inch minimum thickness bituminous concrete surface course conforming to the current state highway specifications for bituminous concrete surface course.

3.3 Flexible Base Bituminous Concrete Pavement

3.3.1 Bituminous concrete or bituminous surface treatment on a flexible base such as gravel or crushed stone removed during construction shall be replaced as follows.

3.3.2 Replace the base course with the same material and to the same thickness as that removed, but not less than 9 inches.

3.3.3 The surface course shall consist of a prime coat and a surface coat with the same thickness as that removed, but not less than 3 inches. Prime coat material shall be MC-30, RT-1, or RT-2 as classified by the Asphalt Institute. The surface coarse shall be central plant mix dense graded bituminous material meeting the Indiana state standard specifications for highway construction. Surfacing materials shall be applied in layers not over 2-1/2 inches thick and each layer shall be compacted to a density of 94 percent of maximum by means of a power roller.

4. MEASUREMENT AND PAYMENT

Surface restoration shall be incidental to construction.

END OF SECTION 2M

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SECTION 2N

WELLS

SECTION 2N

WELLS

1. GENERAL

1.1 Furnish and install all equipment and materials required for monitoring wells and abandonment of existing monitoring and drinking water wells as shown on plans or directed by Construction Engineer Representative.

1.2 Provide all required drilling, pumping, and testing equipment, temporary discharge piping, and all other materials or equipment required to accomplish the Work.

1.3 Contractor shall determine the degree of hazard and shall be solely responsible for appropriate protection of personnel and equipment. For bidding purposes, Class D hazards, as defined in 29 CFR 1910.120, Appendix B may be assumed. Personnel protection to Class D level shall be incidental to work described in this Section.

1.4 GROUP will obtain and pay for all required state, county and local permits for well drilling and abandonment.

1.5 Water from drilling, and testing operations shall be discharged by hose, conduit, or flume to a point of collection and collected or as directed by Construction Engineer Representative.

1.6 Well drilling and sealing shall be performed by an experienced well driller, duly licensed in the State of Indiana.

2. MATERIALS

2.1 Well Casing and Screen

2.1.1 Well casing and screen shall be 2-inch, Schedule 40 in conformance with ASTM F-480-88a. End fittings shall be single entry flush joint threads with teflon "O" rings.

2.1.2 Screen slot size shall be 0.020-inch.

2.1.3 Casing, screen, and fittings shall be made of flush joint threaded PVC. No breaks, welds, or glue shall be used. Single entry flush joints shall be cut so that a teflon "O" ring can be installed in the female fitting.

2.1.4 Screens, casings, and fittings shall be factory cleaned by scrubbing and soaking in detergent, rinsing in clean water, and allowing to dry.

2.1.5 Casings, screens, and fittings shall be individually and separately sealed in 6-mil polyethylene prior to shipment.

2.2 Filter Pack shall be washed No. 9 gravel conforming to ASTM D-448.

2.3 Bentonite Pellet Seal shall be organic free, high swelling, 100 percent pure sodium bentonite pellets, containing no polymers or organic additives, of 1/4-inch nominal diameter. Submit certified laboratory analyses using the EP Toxicity Test Method. All regulated parameters shall be below EP Toxicity Maximum Concentration Limits (MCL). Bentonite pellets shall be PureGold Tablets as manufactured by the American Colloid Co., Holeplug, as manufactured by the NL Baroid Co., or equal.

2.4 Bentonite Grout shall be high solids grout of 100 percent bentonite clay, containing no polymers or organic additives. Submit certified laboratory analyses using the EP Toxicity Test

Method. All regulated parameters shall be below EP Toxicity Maximum Concentration Limits (MCL). Grout shall be PureGold as manufactured by the American Colloid Co., Aquagel Gold Seal as manufactured by the NL Baroid Co., or equal.

2.5 Cement-Bentonite Grout shall consist of Type II portland cement with not more than 5 percent sodium bentonite by weight added, and the minimum amount of water (not over 6 gal/cf) required to give a mixture which can be forced through grout pipes.

3. MONITORING WELLS

3.1 Install monitoring wells before placing any fill on the site.

3.2 Furnish all materials and install monitoring wells as shown on Plans. Construction Engineer Representative will approve location of contractors well locations prior to drilling.

3.3 Advance the borings with a hollow stem auger, to the depths shown on the plans. Where necessary to prevent the formations from caving, use a temporary steel casing.

3.4 Take split spoon samples at 24-inch intervals, starting from the ground surface, and continuing to the bottom of the boring. Visually classify split spoon samples, using the Unified Soils Classification System, and prepare a well log. Preserve all samples in airtight jars for future reference. Submit all samples to the Construction Engineer Representative at the conclusion of the Work.

3.5 Steam clean drilling equipment and tools prior to drilling the first well, at the conclusion of each boring of each new monitoring well, and before removal from the site. Steam clean split spoon samplers between uses.

3.6 In the event that potentially hazardous materials or waste are encountered in boring, stop work at once. Potentially hazardous liquids will be characterized, at the GROUP's expense, as required by 40 CFR parts 260 through 264. Monitoring wells encountering waste material will be abandoned as described in these Specifications.

3.7 Collect drill cuttings and fluids and dispose of as directed by the Construction Engineer Representative.

3.8 Install casing screen filter and bentonite pellet seal as shown on Plans, taking special care to avoid caving of unstable formations and voids in filter or grout materials. Steam clean casings and screens prior to installation to remove any manufacturing-related contaminants.

3.9 Install Cement-Bentonite grout by means of a grout pump and tremie pipe. The mixture, method of placing, and consistency of the grout shall be submitted in advance, and accepted by the Construction Engineer Representative before use. No method will be accepted which does not specify forcing grout from the bottom of the space toward the surface.

3.10 Maintain and submit to the Construction Engineer Representative an accurate record of well grouting, including the following:

- Well Number
- Grout Mix
- Calculated borehole volume
- Measured volume of grout pumped into borehole

- Pressure during pumping
- Time to complete grouting.

3.11 Well Development

3.11.1 Upon completion, develop each well by compressed air or pumping until pH and specific conductivity stabilize. Collect evacuated well water. GROUP shall take appropriate samples, and will have them analyzed, using methods approved by the U.S. EPA, for Priority Pollutants.

3.11.2 In the event evacuated water is deemed safe for discharge onsite, discharge it by hose, conduit, or flume to a location as directed by Construction Engineer Representative.

3.11.3 In the event the water is found to be contaminated, it will be treated, at the GROUP's expense prior to discharge or eventual disposal offsite.

3.12 Measure the depth to groundwater, immediately after development, and submit the results to the Construction Engineer Representative.

4. ABANDONMENT OF WELLS

4.1 Drinking Water Wells

4.1.1 Furnish and install all materials, and perform all work required to abandon existing drinking water wells as shown on Plans or directed by the Construction Engineer Representative. "Record of Water Well" of two of the three wells is provided in Appendix B, for reference.

4.1.2 Drinking water wells shall be sealed by a well driller, duly licensed in the State of Indiana, in full compliance with the provisions of 310 IAC 16 and other pertinant laws and regulations.

4.1.3 Disconnect the well to be abandoned from the water system. Any substance which may interfere with plugging shall be removed.

4.1.4 Install bentonite pellets or bentonite grout to the level of the static water table. Follow the procedures of Section 4.2.3 below.

4.1.5 Install cement bentonite grout above the static water table. Follow the procedures of Section 4.2.3 below.

4.1.6 Install a plug of Class C concrete. Plug shall be a minimum of six inches thick and shall bear two feet on undisturbed ground.

4.2 Monitoring Wells

4.2.1 Furnish and install all materials, and perform all work required to abandon existing monitoring wells and new monitoring wells which encounter waste as shown on Plans or directed by the Construction Engineer Representative.

4.2.2 Pull or drill out the existing casing to the elevation of the end of the original boring as indicated in the boring logs provided as Appendix B. The borehole will be held open with drilling mud or temporary casing, as required, to prevent sloughing of cuttings into the borehole.

4.2.3 Install Cement-Bentonite grout, in a single

operation, by means of a grout pump and tremie pipe. The mixture, method of placing, and consistency of the grout shall be submitted in advance, and accepted by the Construction Engineer Representative before use. No method will be approved which does not specify forcing grout from the bottom of the space toward the surface.

4.3 Records

4.3.1 Maintain and submit to the Construction Engineer Representative an accurate record of well plugging and abandonment, including the following:

- Well Number
- Grout Mix
- Calculated borehole volume
- Measured volume of grout pumped into borehole
- Pressure during pumping
- Time to complete grouting

5. MEASUREMENT AND PAYMENT

5.1 Measurement

5.1.1 Water wells and monitoring wells to be abandonded shall be measured according to the length of casing existing in place. Casing length may be measured by dropping a weighted line down the casing, by measuring the casing after it is pulled, or by other accepted method.

5.1.2 Monitoring wells shall be measured according to the length of drill bore hole.

5.1.3 Temporary casings, drilling mud, Bentonite, grout filter pack, well accessories, caps, concrete, storage and on site disposal of waste and all other work related to well drilling or abandonment shall be incidental to the appropriate payment items.

5.2 Payment

5.2.1 Drinking water and monitoring wells to be abandoned shall be paid for per lineal foot under the corresponding payment item for "Wells".

5.2.2 Monitoring well installation shall be paid for per lineal foot under the payment item for "Wells".

5.2.3 Personnel protection to a higher level than Level D, if required, will be paid for per man hour, according to the level of protection required, as "Additional Perscnnel Protection".

5.2.4 Treatment or disposal of contaminated development water, if required, will be paid for on a force account basis.

END OF SECTION 2N

DIVISION 3

CONCRETE

SECTION:

3E CAST-IN-PLACE CONCRETE

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FOR

DIVISION 3

CONCRETE

SECTION 3E

CAST-IN-PLACE CONCRETE

1. GENERAL

1.1 Concrete shall be furnished in accordance with ASTM C94, Standard Specification for Ready-Mixed Concrete.

1.2 Concrete shall be incidental to construction.

2. CONCRETE MATERIALS

2.1 Cement

2.1.1 Portland Type II, ASTM C150, for concrete used in well construction or abandonment.

2.1.2 Portland Type III, ASTM C150, high early strength, only where directed.

2.2 Fine Aggregate

Standard fine aggregate, natural sand, ASTM C33.

2.3 Coarse Aggregate

2.3.1 Maximum size of coarse aggregate shall be 3/4 inch.

2.3.2 Aggregate shall consist of gravel, crushed gravel, or crushed stone conforming to ASTM C33.

2.4 Water

Water shall be clean, fresh, potable, and free from injurious amounts of mineral and organic substances.

3. CLASSES OF CONCRETE

Concrete shall be the class designated when placed in the following locations:

Class A -- against earth in slabs and footings and where used as a topping.

Class B -- in supported slabs, beams, columns, and walls.

Class C -- in fillets, cradles, and where used to fill voids or for backfilling operations and as a coating for subgrade soil at locations specifically designated on the Drawings.

4. PROPORTIONING MATERIALS

4.1 Concrete proportions shall be based upon Alternative No. 3 of ASTM C94. Furnish 3 certified copies of design mix.

4.2 Concrete shall be composed of portland cement, fine aggregate, coarse aggregate, and the water specified herein.

4.3 Classes And Properties Of Concrete

Class	Max. Gal Of Water Per Sack Of Cement	Min. Bags Of Cement Per cy Of Conc	Minimum Strength AT 28 Days, psi	Maximum Slump In Inches
A	5.5	5.75	3500	4
B	5.5	5.75	3500	6
C	8.0	4.50	2000	4

4.4 Aggregate

Coarse aggregate shall be used in each class of concrete in the greatest amount consistent with required workability. The ratio of sand to total aggregate shall be from 33 to 42 percent by weight based upon surface dry material, unless a higher percentage is authorized by Construction Engineer Representative. Minor changes in aggregate proportioning shall be made during the work to adjust for changes in aggregate gradations.

5. ON-SITE MATERIAL STORAGE

5.1 As soon as received, store cement in a dry, weathertight, ventilated structure, with provisions for preventing absorption of moisture.

5.2 Stored aggregate shall have good drainage and a means for preventing inclusion of foreign matter and of preserving gradation. Stockpile various sizes or gradations separately.

6. BATCHING, MIXING AND DELIVERY

Batch, mix, and deliver concrete as specified in ASTM C94.

6.1 Mixing Concrete

6.1.1 Mix concrete in an approved type batch mixer or in ready mix equipment conforming to ASTM C94. Do not exceed the manufacturer's rated capacity of the mixer.

6.1.2 Mix concrete until there is a uniform distribution of the materials, and discharge completely before recharging the mixer. For job mixed concrete, mix at the speed recommended by the manufacturer for at least one minute for 1-cy mixer capacity after all materials are in the mixer. Increase the mixing time 15 seconds for each additional 1/2-cy of mixer capacity.

7. MEASUREMENT AND PAYMENT

Cast-in-place concrete shall be incidental to construction.

END OF SECTION 3E

APPENDIX A

SOIL DATA FOR CLAY

CAP MATERIAL

APPENDIX B

EXISTING MONITORING WELLS AND DRINKING WATER WELL BORING LOGS

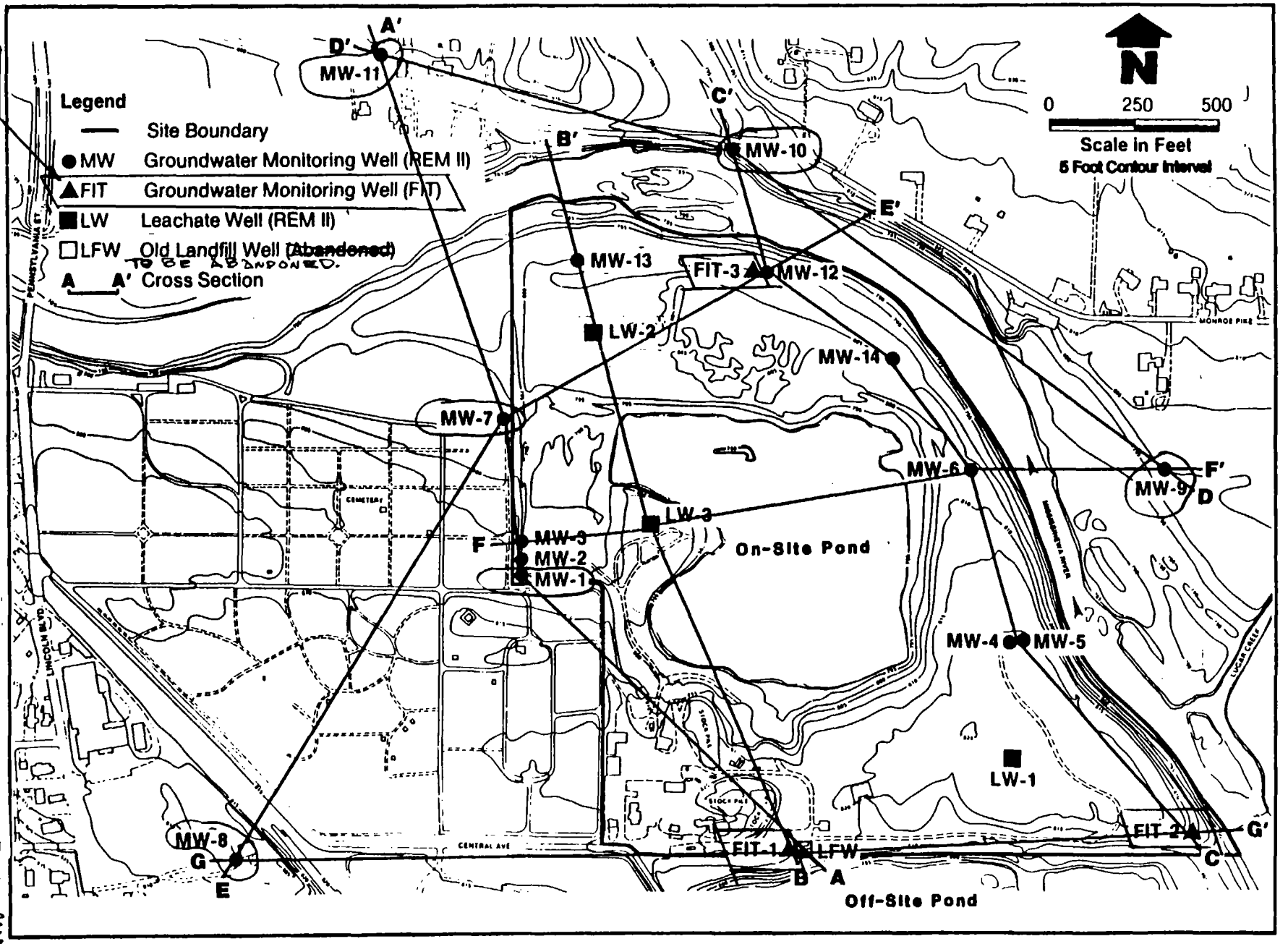


FIGURE 2-2 MONITORING WELL AND GEOLOGIC CROSS SECTION LOCATIONS MARION/BRAGG LANDFILL

ADDITIONAL WELLS FIT 1,2+3 TO BE ABANDONED. THERE IS NO WELL CONSTRUCTION/2-6 OR DRILLING LOGS AVAILABLE.

MONITORING WELL MW-1+7, MW-8, 9, 10 & 11 NOT REMOVED, TO REMAIN IN PLACE. MD 1/12/89

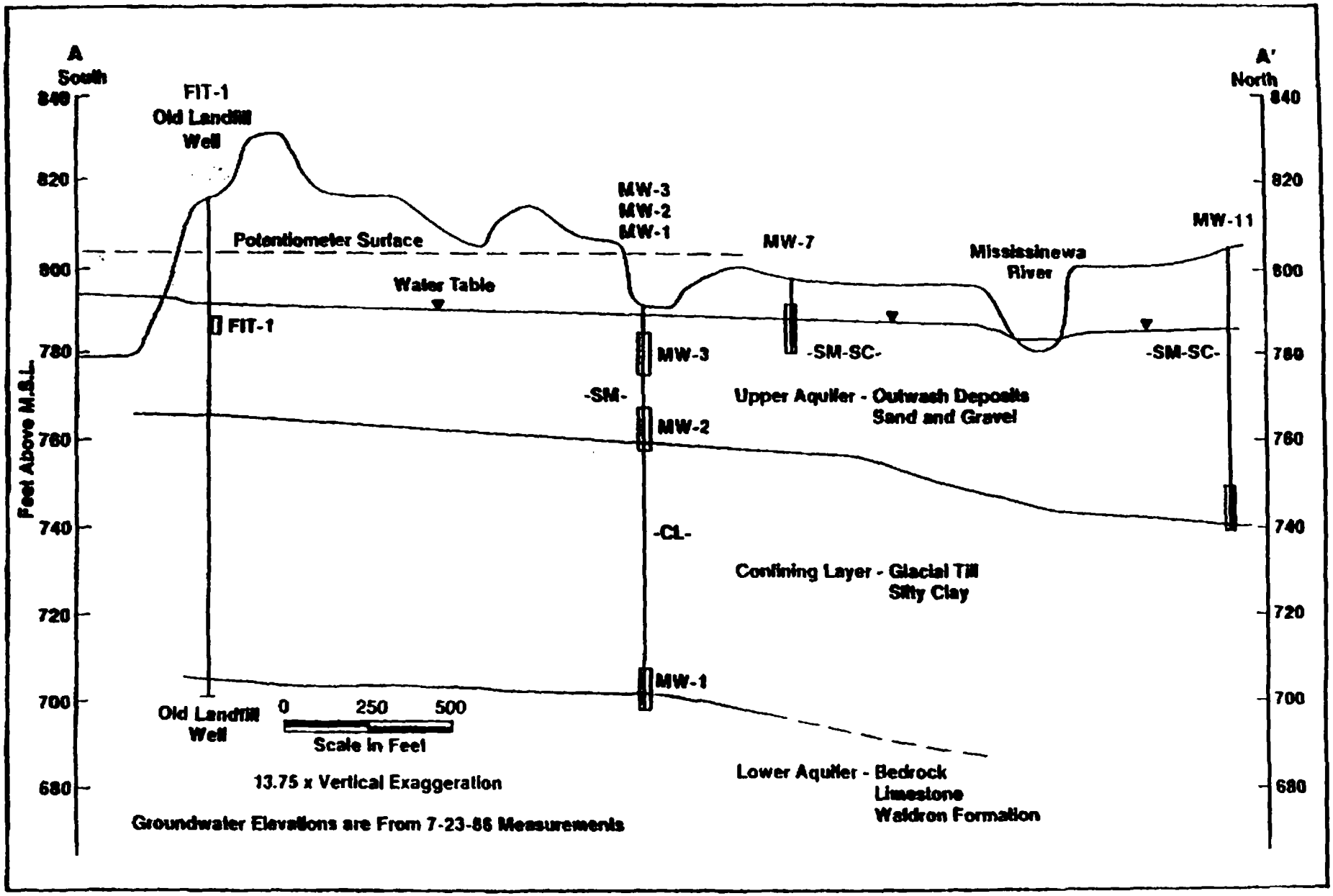


FIGURE 2-3 GEOLOGIC CROSS SECTION A-A' MARION/BRAGG LANDFILL

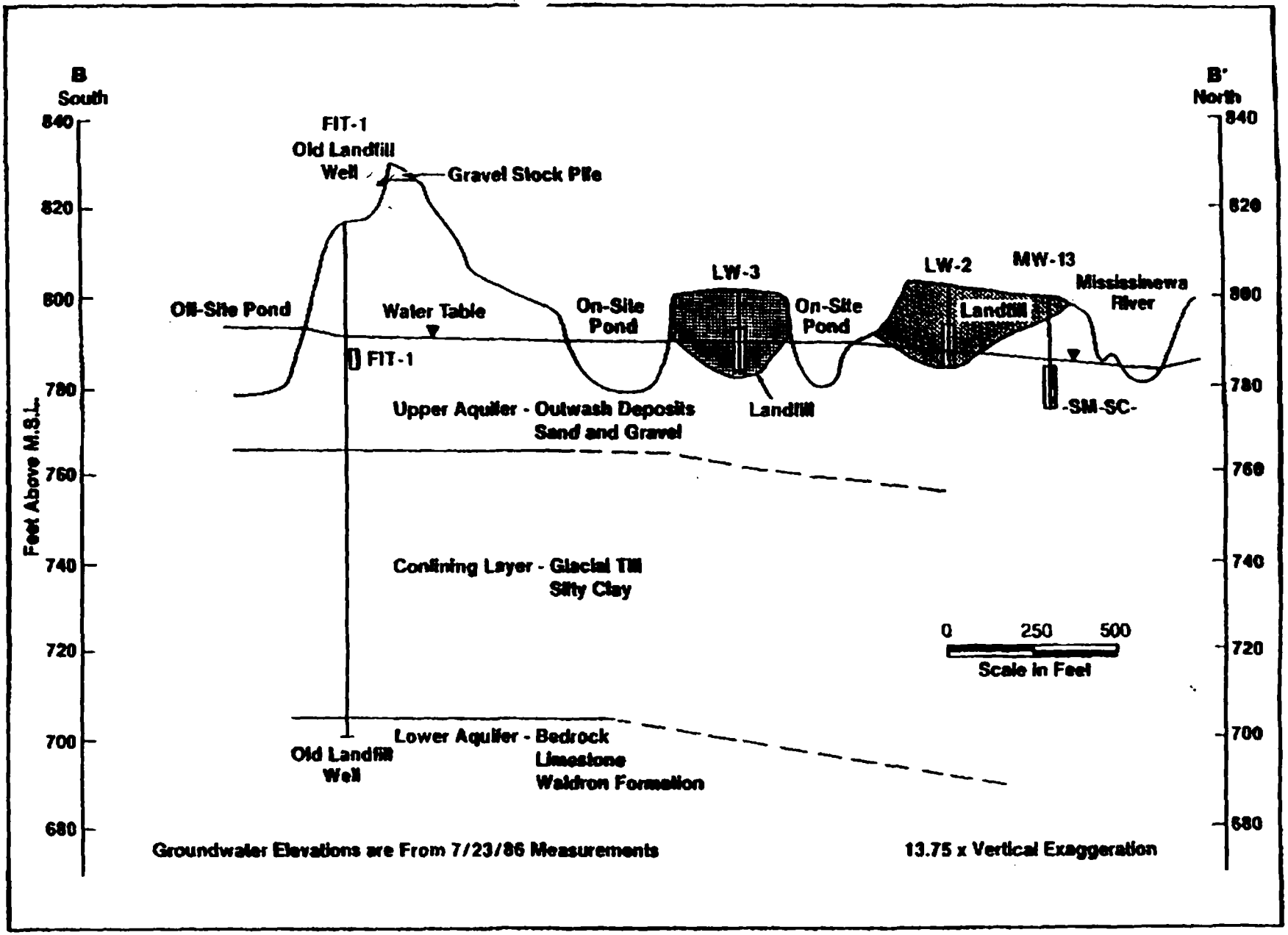


FIGURE 2-4 GEOLOGIC CROSS SECTION B-B' MARION/BRAGG LANDFILL

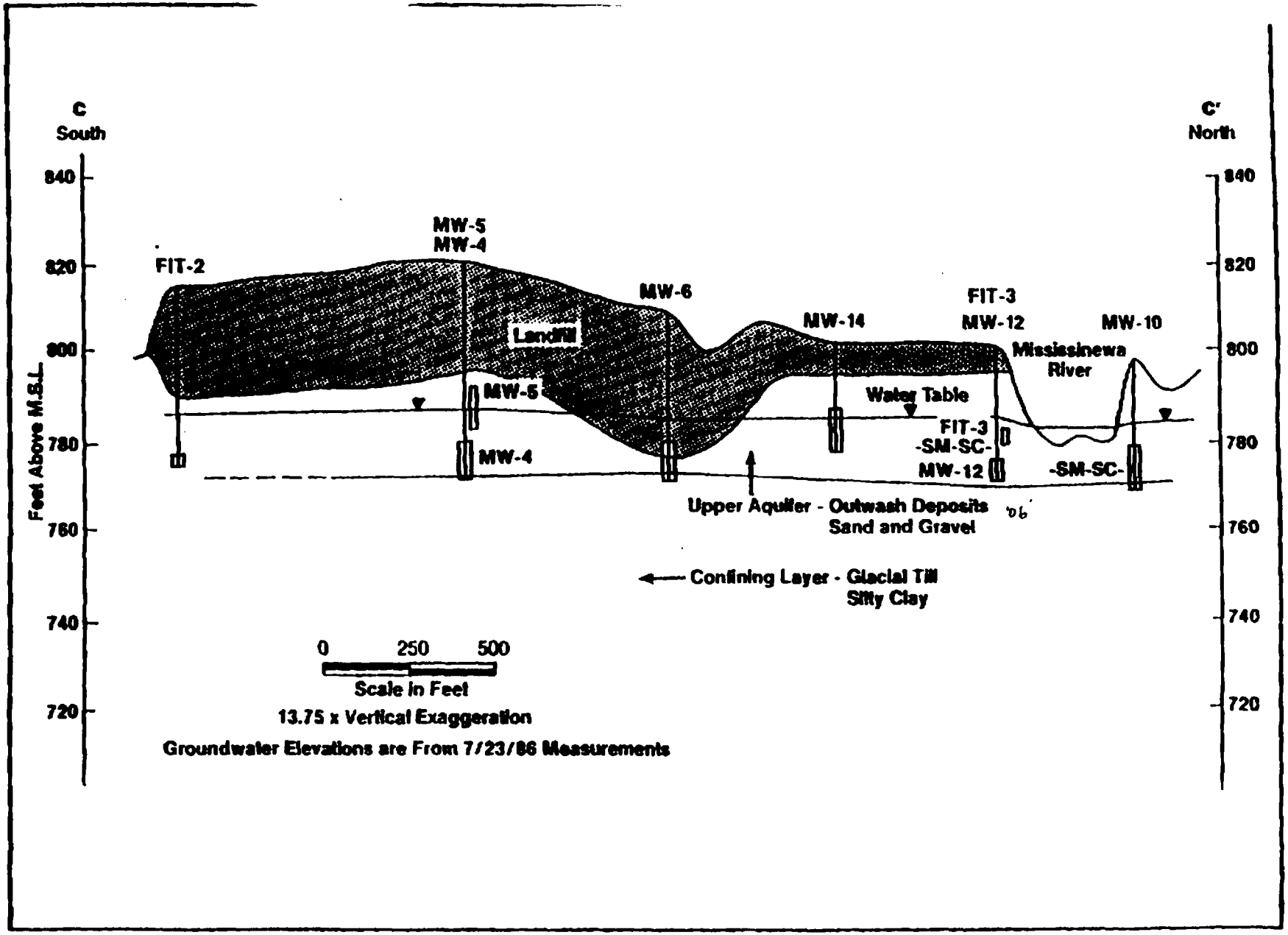


FIGURE 2-5 GEOLOGIC CROSS SECTION C-C' MARION/BRAGG LANDFILL

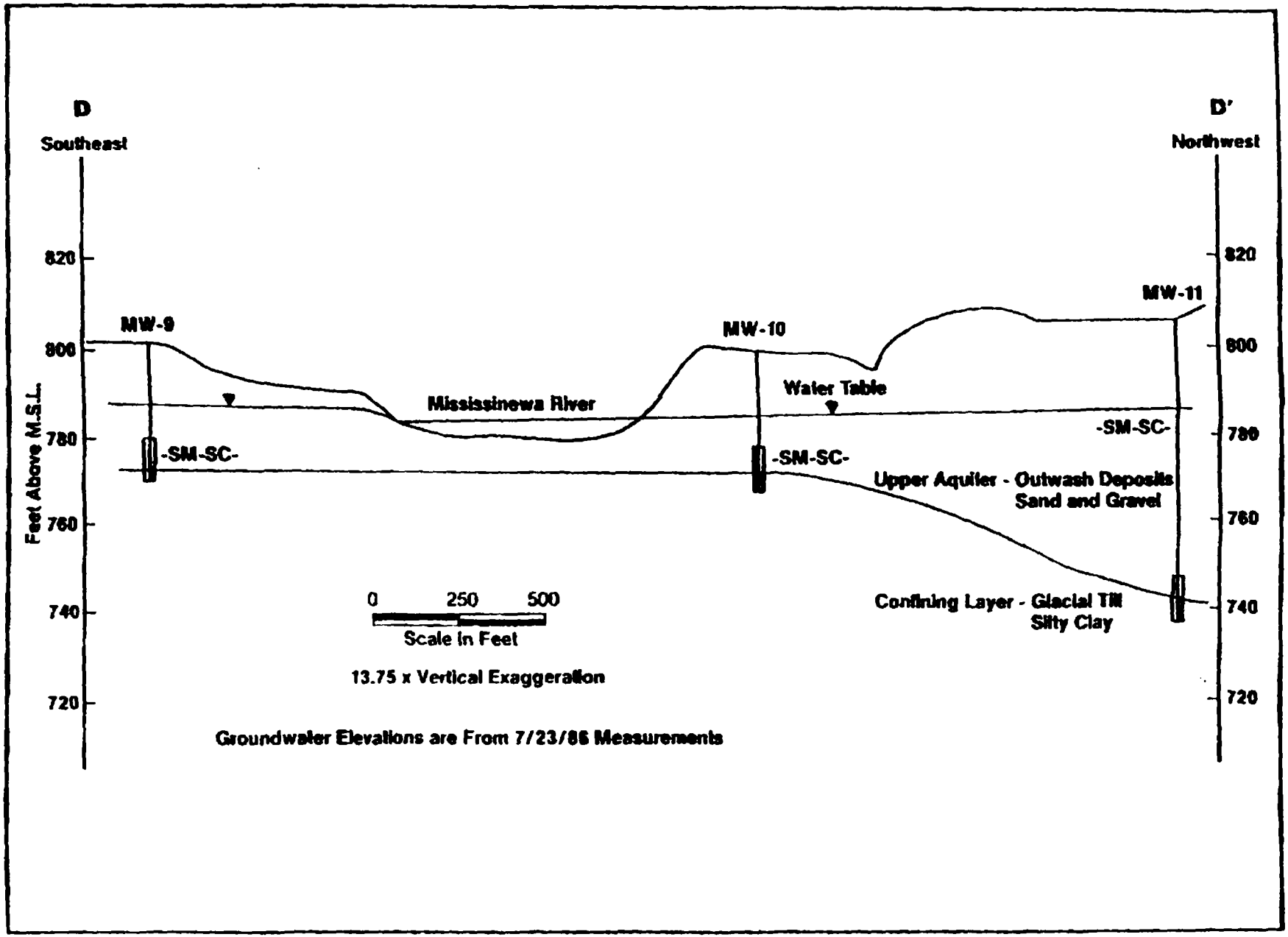


FIGURE 2-6 GEOLOGIC CROSS SECTION D-D' MARION/BRAGG LANDFILL

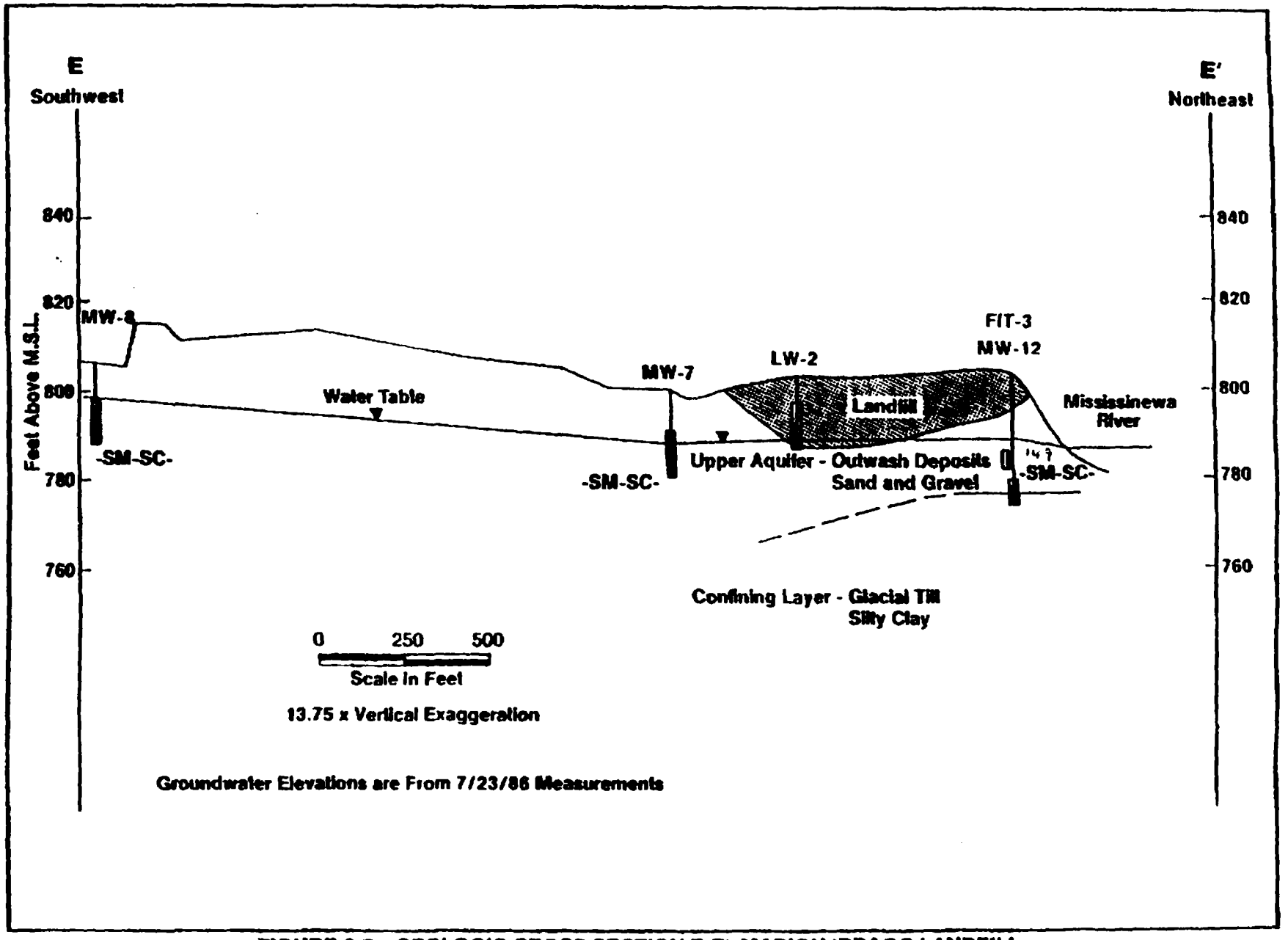


FIGURE 2-7 GEOLOGIC CROSS SECTION E-E' MARION/BRAGG LANDFILL

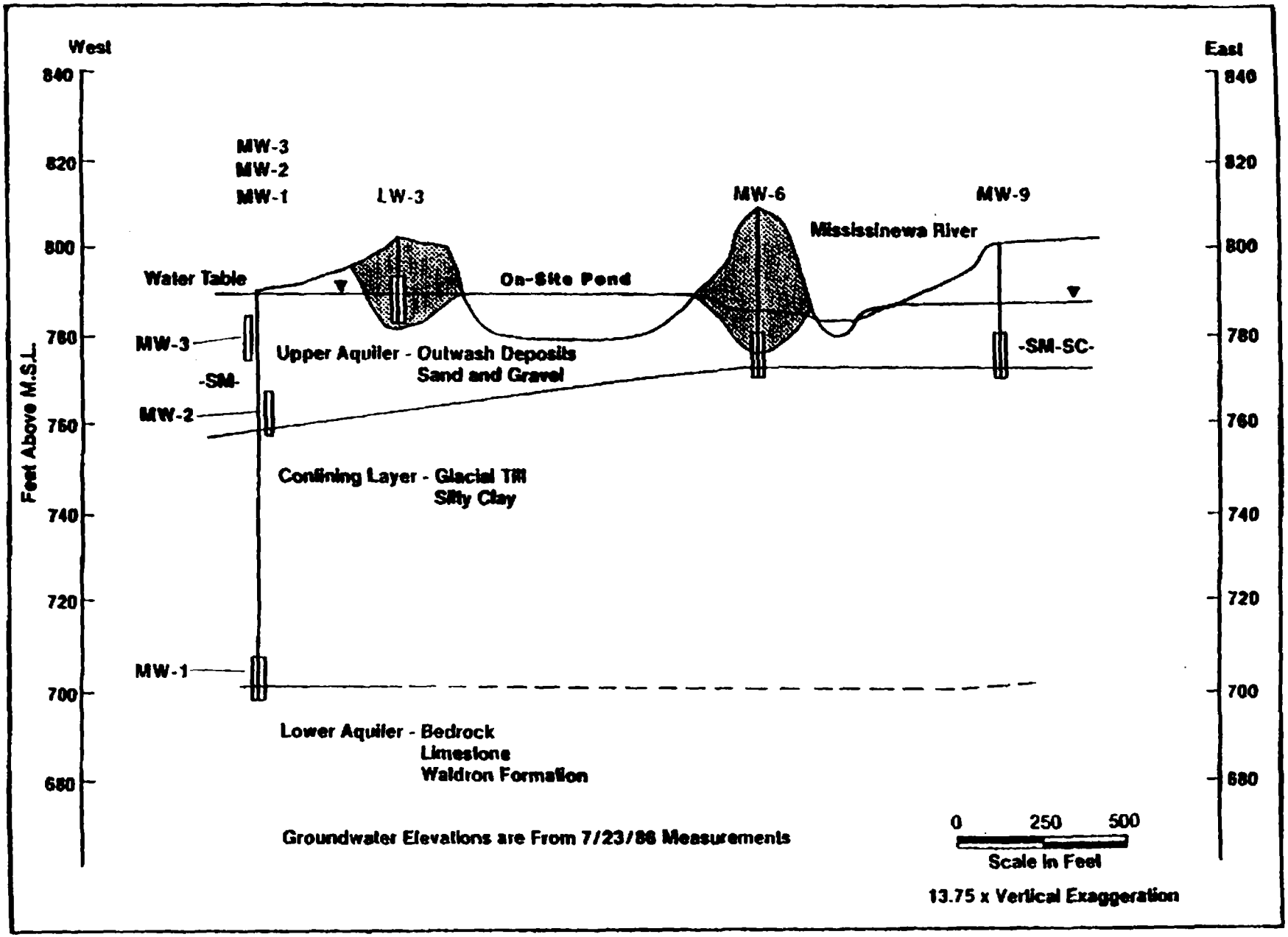


FIGURE 2-8 GEOLOGIC CROSS SECTION F-F' MARION/BRAGG LANDFILL

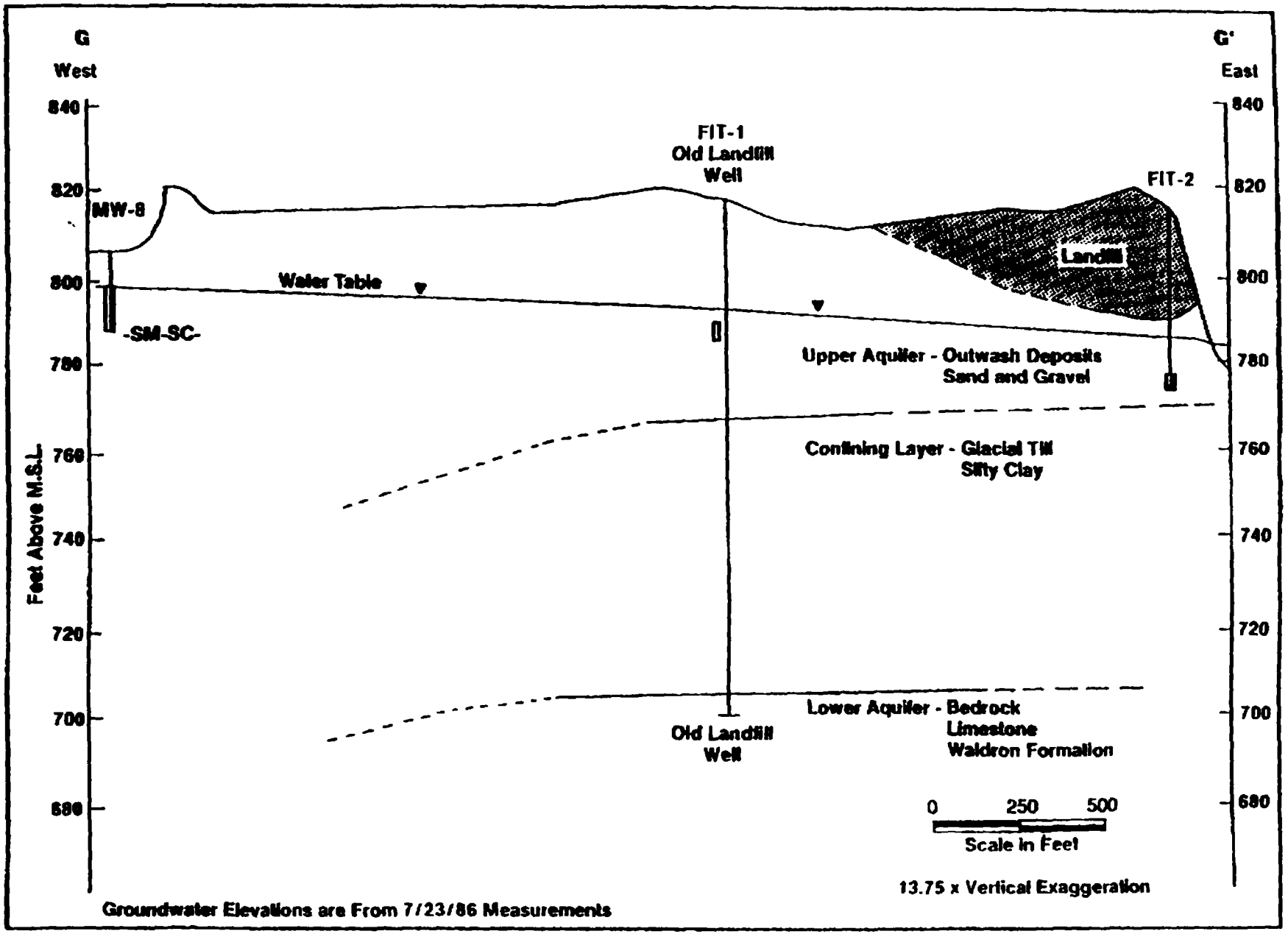


FIGURE 2-9 GEOLOGIC CROSS SECTION G-G' MARION/BRAGG LANDFILL

RECD 1/12/89

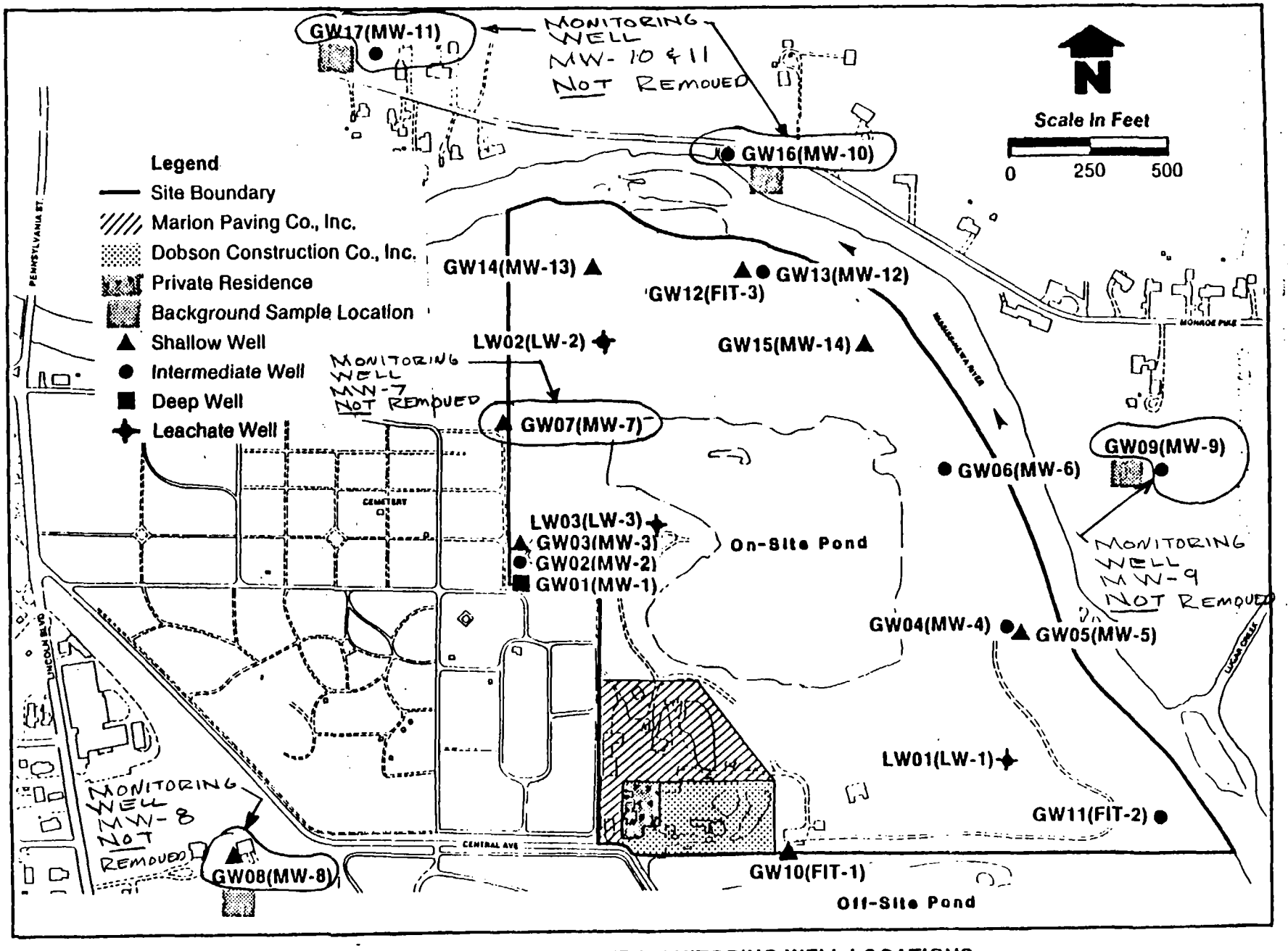


FIGURE 3-6 GROUNDWATER MONITORING WELL LOCATIONS - MARION/BRAGG LANDFILL

Well MW-1

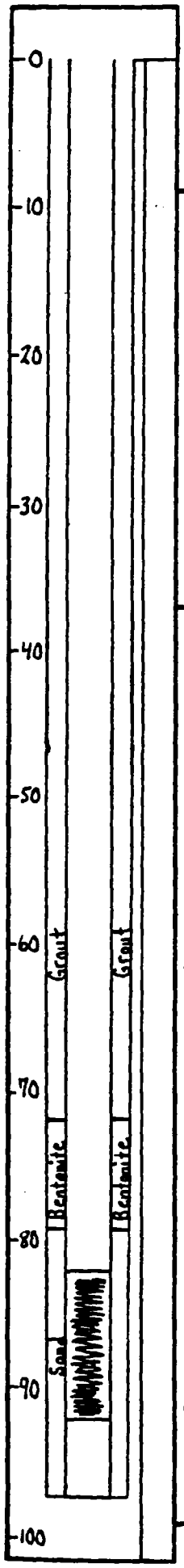
Well Construction Summary

Location or Coords: West side of site Elevation: Ground Level 790.54

Top of Casing

Project Marion/Bragg Landfill Location West side of site

Personnel Carlos Serna & Richard Gnat



Drilling Summary:

Total Depth 92.9'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA - 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C=Casing S=Screen

+3	-	83	C	83	-	93	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter .01" Slot

S2

Centralizers

Filter Material Silica Sand

Cement Portland Type III with a Bentonite mixture

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	2/18	1630	2/19	1600
Geophys. Logging:				
Casing:				
	2/19	1600	2/19	1700
Filter Placement:	2/20	0800	2/20	0900
Cementing:	2/20	1030	2/20	1630
Development:				
Other:				
Plug	2/20	0900	2/20	1030

Well Development:

Development not needed, well is flowing.

Comments:

Well is a flowing well. It is apparent that the seal is leaking. The well had to be pulled and grouted up to prevent crossing of the two aquifers.

THIS MONITORING WELL MW-1 TO REMAIN IN PLACE, DO NOT REMOVE

MP 2/9/89

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#1 OWNER:
LOCATION: West side of site ADDRESS:
TOTAL DEPTH 92.9'
SURFACE ELEVATION: 793.60 MSL WATER LEVEL: 806.6 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 2/19/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Carlos J. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		1	SS	13 16"	GM: Light brown, Coarse gravel and sand, poorly graded with sand and silt mixtures, vapor screening BG.
5		2	SS	21 18"	GM: Light brown, coarse gravel and sand, poorly graded with silty mixture, evidence of oxydation, vapor screening BG.
					First water at 6'
		3	SS	13 16"	GM: Light brown, coarse gravel and sand, evidence of oxydation poorly graded increased silt mixture, vapor screening BG. Wet
10		4	SS	30 18"	SP: Brown to gray, Medium to coarse sand and gravel, with a silt matrix, poorly graded, vapor screening BG. Wet
		5	SS	21 18"	GM: Brown, coarse to medium gravel and sand, poorly graded with silt mixture, vapor screening BG. Wet
15		6	SS	32 18"	SP: Brown to gray, sand and gravel, poorly graded with silty matrix and large pebbles, vapor screening BG. Wet
		7	SS	32 18"	SP: Gray, coarse to medium, silty sand, poorly graded, vapor screening BG. Wet
20		8	SS	24 18"	GM: Brown, coarse gravel and sand, poorly graded with a silt mixture, vapor screening BG. Wet

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#1 OWNER:
LOCATION: West side of site ADDRESS:
TOTAL DEPTH 92.9'
SURFACE ELEVATION: 793.6 MSL WATER LEVEL: 806.6 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 2/19/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Carlos J. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
		9	SS	30 18"	BP: Light brown, coarse to medium silty sand with gravels, poorly graded, vapor screening BG. Wet
25		10	SS	44 18"	SP: Light brown, coarse to medium silty sand with gravels, poorly graded, vapor screening BG. Wet
30		11	SS	64 18"	SP: Light brown, coarse to medium silty sand with gravels, Poorly graded, vapor screening. BG Wet
35		12	SS	30 18"	SP: to ML: Brown, medium to coarse sand grading to fine silty sand increasingly stiff and plastic, vapor screening, BG.
40		13	SS	40 12"	SC-CL: Brown, upper 1/2 fine clayey sand with trace of silt,

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#1 OWNER:
LOCATION: West side of site ADDRESS:
TOTAL DEPTH 92.9'
SURFACE ELEVATION: 793.6 MSL WATER LEVEL: 806.6 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 2/19/86
DRILLER: Ron Mathes HELPER: Bill Wilkins
LOG BY: Carlos J. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
					lower 1/2 silty clay, medium dense, vapor screening, BG.
		14	SS	17 16"	CL: Brown, silty clay with a trace of fine to medium sand, vapor screening, BG.
		15	SH	18"	Shelby Tube
		16	SS	36 18"	CL: Brown, silty clay, massive and dense, vapor screening, BG.
		17	SS	33 18"	CL: Brown, silty clay with a trace of fine sand stiff and

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#1
LOCATION: West side of site
OWNER:
ADDRESS:
TOTAL DEPTH: 92.9'
SURFACE ELEVATION: 793.6 MSL
WATER LEVEL: 806.6 MSL
DRILLING COMPANY: Alt& Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/19/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Carlos J. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
60					dense, vapor screening, BG.
		18	SS	31 16"	CL: Brown, Silty clay with a 1 or 2 inch fine sand zone at 65', vapor screening, BG.
65					
		19	SS	31 18"	CL: Brown, silty clay, very plastic, massive and stiff, vapor screening, BG.
70					
		20	SS	37 18"	CL: Brown, silty clay with a trace of small gravels, vapor screening, BG.
75					
		21	SS	50/4 18"	CL: Brown, silty clay with medium to coarse gravels,
80					

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#1
LOCATION: West Side of site
OWNER:
ADDRESS:
TOTAL DEPTH 92.9'
SURFACE ELEVATION: 793.6 MSL
WATER LEVEL: 806.6 MSL
DRILLING COMPANY: Alt & Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/19/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Carlos J. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
80					vapor screening, BG.
		22	SS	90 6"	CL: Brown, Silty clay with small to coarse gravels, (limestone and igneous), vapor screening, BG.
85					
		23	SS	76 6"	CL: Brown, silty clay with small to medium gravel, vapor screening, BG.
		24	core	6.25'	Bedrock surface at 88'- Waldron formation, limestone, solution widening of bedding planes. RQD=85%
90					

* A.S.T.M. D1586

Well MW-2

Well Construction Summary

Location or Coords: West side of site

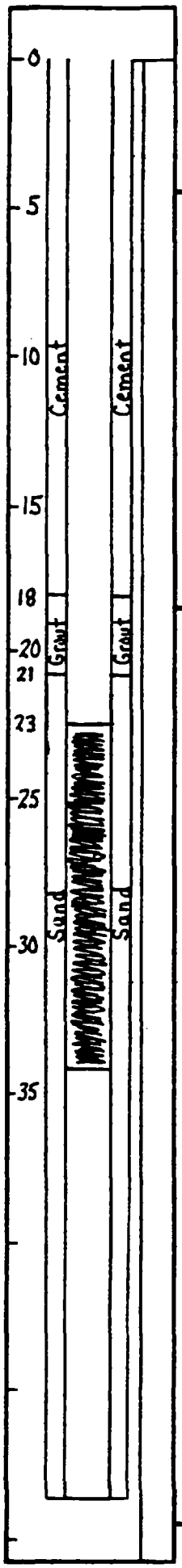
Elevation: Ground Level 790.54

Top of Casing 793.85

Project Marion/Bragg Landfill

Location West side of site

Personnel Carlos Serna & Richard Gnat



Drilling Summary:

Total Depth 34.5'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA - 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C=Casing S=Screen

+3	-	23	C	23	-	33	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter .01" Slot

S2

Centralizers

Filter Material Natural Sand

Cement Portland Type III with a Bentonite Mixture

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	2/21	0800	2/21	1145
Geophys. Logging:				
Casing:	2/21	1145	2/21	1155
Filter Placement:	2/21	1300	2/21	1315
Cementing:	2/21	1345	2/21	1430
Development:				
Other:				
Plug	2/21	1315	2/21	1835

Well Development:

Pumped and bailed, over 75 gal. pumped.

Comments:

"DRILLING LOG" NOT AVAILABLE PER ERM 1/6/09 MP

WESTON DESIGNERS CONSULTANTS

Well MW-3

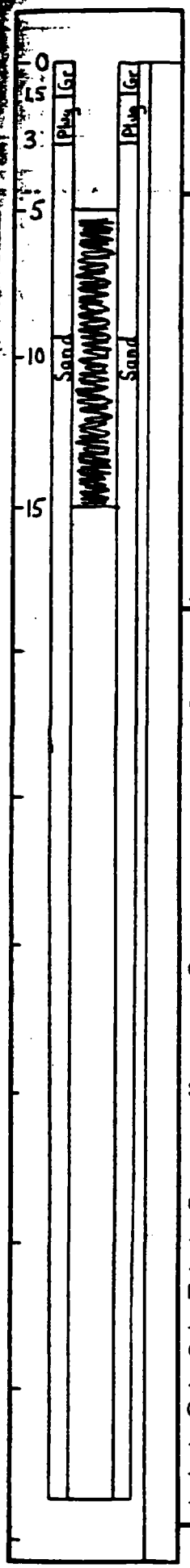
Well Construction Summary

Location or Coords: West side of site

Elevation: Ground Level 790.60

Top of Casing 793.83

Project Marion/Bragg Landfill Location West side of site Personnel Carlos Serna & Richard Gnar



Drilling Summary:

Total Depth 15'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA - 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C=Casing S=Screen

+3	-	5	C	5	-	15	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter 0.01" Slot

S2

Centralizers

Filter Material Natural Sand

Cement Portland Type III with a Bentonite Mixture

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	2/21	1450	2/21	1530
Geophys. Logging:				
Casing:				
	2/21	1530	2/21	1540
Filter Placement:	2/21	1540	2/21	1545
Cementing:	2/21	1610	2/21	1700
Development:				
Other:				
Plug	2/21	1545	2/21	1610

Well Development:

Pumped and bailed. Approximately 75 gal. was pumped.

Comments:

"DRILLING LOG" NOT AVAILABLE PER ERM 1/6/89 RB

WESTON DESIGNERS CONSULTANTS

Well MW-4

Well Construction Summary

Location or Coords: East side of site on landfill

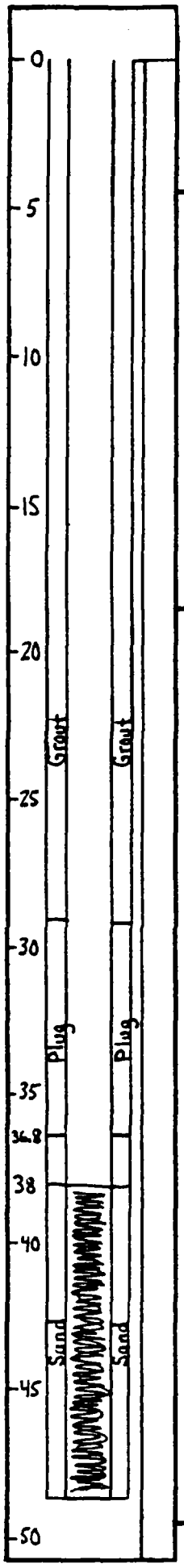
Elevation: Ground Level 820.14

Top of Casing 822.21

Project Marion/Bragg Landfill

Location East side of site

Personnel Carlos Serna & Richard Gnat



Drilling Summary:

Total Depth 48.5'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C=Casing S=Screen

+2.1'	-	38'	C	38'	-	48'	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter 0.01" Slot

S2

Centralizers

Filter Material Natural Sand and Silica Sand

Cement Portland Cement Type III, with mixture of Bentonite

Other Voloclay Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	2/25	1515	2/27	1450
Geophys. Logging:				
Casing:				
	2/27	1530	2/27	1545
Filter Placement:	2/27	1600	2/27	1630
Cementing:	2/28	0900	2/28	1200
Development:				
Other:				
Plug	2/27	1630	2/27	1700

Well Development:

Pumped and bailed, approximately 50 gal

Comments:

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#4
LOCATION: East side of site. Part of a two well nest
SURFACE ELEVATION: 823.2MSL
OWNER:
ADDRESS:
TOTAL DEPTH: 48.5'
WATER LEVEL: 793.22 MSL
DRILLING COMPANY: Alt&Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/25/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Richard Gnat & Carlos Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
5					Fill (no samples collected)
10					Fill (no samples collected)
15					Fill (no samples collected)
20					Fill (no samples collected)

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#4 OWNER:
LOCATION: Wast side of site. Part of a two well nest. ADDRESS:
TOTAL DEPTH 48.5'
SURFACE ELEVATION: 823.2 MSL WATER LEVEL: 793.22 MSL
DRILLING COMPANY: Alt&Witzig DRILLING METHOD: HSA DATE DRILLED: 2/25/86
DRILLER: Ron Mathes HELPER: Bill Wilkins
LOG BY: Richard Gnat & Carlos Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
					Fill to approximarely 23 feet
25		1	SS	20 12"	SC: Brown, sandy gravely clay, poorly graded vapor screening BG.
		2	SS	34 8"	SP : Brown, silty gravelly sand, poorly graded, vapor screening BG.
30		3	SS	257 7"	SP : Brown to tan, silty gravelly sand, poorly graded, vapor screening BG
		4	SS	58 13"	SP : Brown to tan, silty gravelly sand, poorly graded, vapor screening BG.
35		5	SS	50/4 9"	SC: Gray to brown, clayey gravelly sand, poorly graded, vapor screening BG.
40		6	SS	51 12"	SW: Gray to brown, gravelly sand, fairly well graded.

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#4 OWNER:
LOCATION: East side of site. Part of a two well nest. ADDRESS:
TOTAL DEPTH 48.5'
SURFACE ELEVATION: 823.2 MSL WATER LEVEL: 793.22 MSL
DRILLING COMPANY Alt & Witzig DRILLING METHOD HSA DATE DRILLED 2/25/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Richard Gnat & Carlos Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
40					vapor screening BG, wet
		7	SS	50/5 10"	SW: Brown, coarse sand with some gravel, vapor screening BG, wet
48		8	SS		SW-CL: Brown, coarse to medium sand in contact with an extremely hard dry silty clay till, vapor screening-HNU 5 units.
50					

* A.S.T.M. D1586

Well MW-5

Well Construction Summary

Location or Coords: East side of site on landfill

Elevation: Ground Level 820.09

Top of Casing 823.19

Drilling Summary:

Total Depth 37'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+3.1'	- 26.5'	C	26.5'	- 36.5'	S
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter, 0.01" Slot

S2

Centralizers

Filter Material Natural Sand and Silica Sand

Cement Portland Cement Type III with a Bentonite mixture

Other Voloclay Bentonite

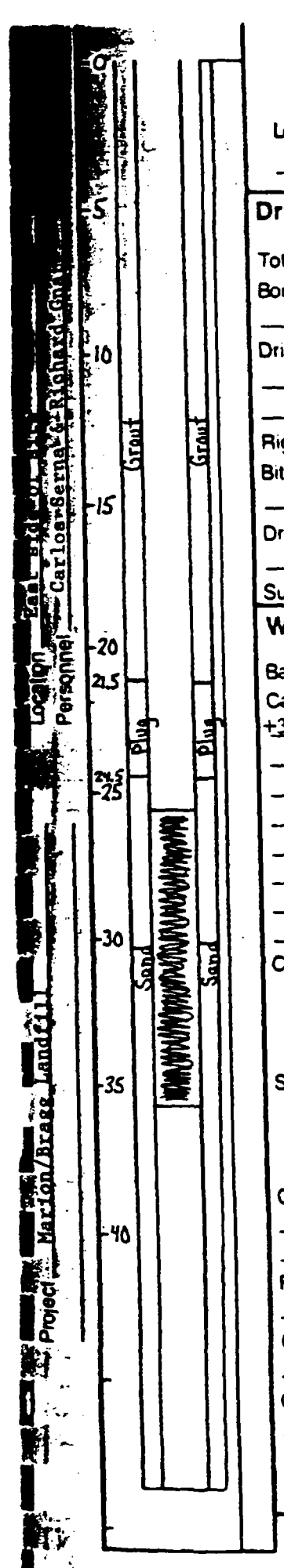
Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	2/28	1400	3/6	1100
Geophys. Logging				
Casing				
	3/6	1300	3/6	1320
Filter Placement	3/6	1320	3/6	1400
Cementing	3/6	1430	3/6	1700
Development				
Other				
Plug	3/6	1400	3/6	1430

Well Development:

Pumping and bailing, approximately 50 to 70 gal of water

Comments:



WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#5
LOCATION: East side of site. Part of a two well nest.
SURFACE ELEVATION: 823.15MSL
OWNER:
ADDRESS:
TOTAL DEPTH: 37'
WATER LEVEL: 793.2MSL
DRILLING COMPANY: Alt&Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/28/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
5					Fill (no samples collected)
10					Fill (no samples collected)
15					Fill (no samples collected)
20					Fill (no samples collected)

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#5
LOCATION: East side of site.
SURFACE ELEVATION: 823.15MSL
OWNER:
ADDRESS:
TOTAL DEPTH: 37'
WATER LEVEL: 793.2 MSL
DRILLING COMPANY: Alt&Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/28/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
					Fill to approximately 24 feet
25					SP: Brown to tan, silty gravelly sand, vapor screening BG
					(Refer to MW#4 for more geologic information)
30					
					SP: Brown to tan, silty gravelly sand, vapor screening BG.
35					
40					

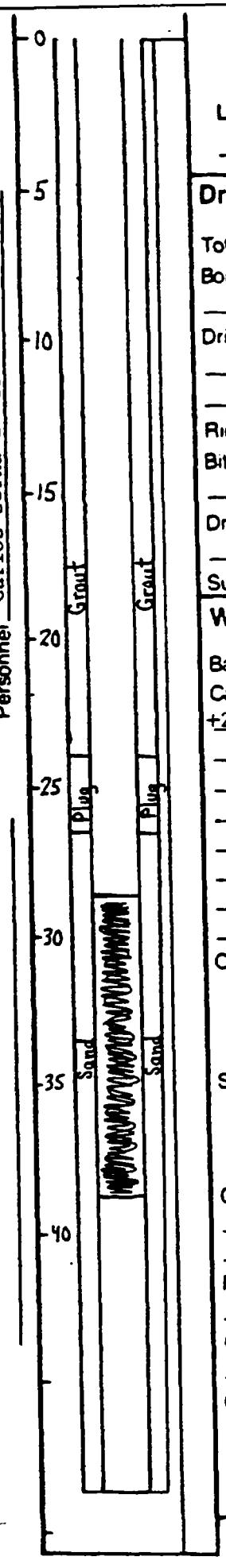
* A.S.T.M. D1586

Well Construction Summary

Location or Coords: East side of site

Elevation Ground Level 808.60

Top of Casing 810.66



Drilling Summary:

Total Depth 38.5'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.06'	28'	C	28'	-	38'	S

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter, 0.01" Slot

S2

Centralizers

Filter Material Natural Sand and Silica Sand

Cement Portland Cement Type III with mixture of Bentonite

Other Voloclay Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	3/8	1000	3/8	1230
Geophys. Logging:				
Casing:				
	3/8	1230	3/8	1300
Filter Placement	3/8	1300	3/8	1340
Cementing	3/8	1400	3/8	1730
Development				
Other:				
Plug	3/8	1340	3/8	1355

Well Development:

Pumping and bailing, approximately 50 to 70 gal

Comments:

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#6 OWNER:
LOCATION: East side of fire. ADDRESS:
TOTAL DEPTH 38.5'
SURFACE ELEVATION: 811.66MSL WATER LEVEL: 792.87 MSL
DRILLING COMPANY: Alt&Witzig DRILLING METHOD: HSA DATE DRILLED: 3/8/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Paul Bartz & Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
			cut-		
			tings		Fill: Cloth, plastic, paper, some organic degris.
			cut-		
10			tings		Fill: Paper, plastic, organic degris.
			cut-		
15			ings		Fill: Paper, plastic, organic debris.
20					Fill: Paper, plastic, organic debris.

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#6 OWNER:
LOCATION: East side of site. ADDRESS:
TOTAL DEPTH 38.5'
SURFACE ELEVATION 811.66MSL WATER LEVEL: 792.87 MSL
DRILLING COMPANY Alt &Witzig DRILLING METHOD: HSA DATE DRILLED: 3/8/86
DRILLER: Ron Mathes HELPER: Bill Wilkins
LOG BY: Paul Bartz & Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
		cut-tings			Fill: Paper, plastic, organic degris.
25					
		cut-tings			Fill: Paper, plastic, organic debris.
30					
		1	SS	55 14"	SW: Light brown, medium grain sand trace of silts, well graded, vapor screening HNU-6 units.
		2	SS	49 8"	SC: Red-brown, clayey sand, trace of pebbles, vapor screening HNU-9.5 units.
35					Top of till at 36'.
		3	SS	109 10"	CL: Brown gray, silty clay trace of gravel, very tight and dense, vapor screening HNU-10.5 units.
40					

* A.S.T.M. D1586

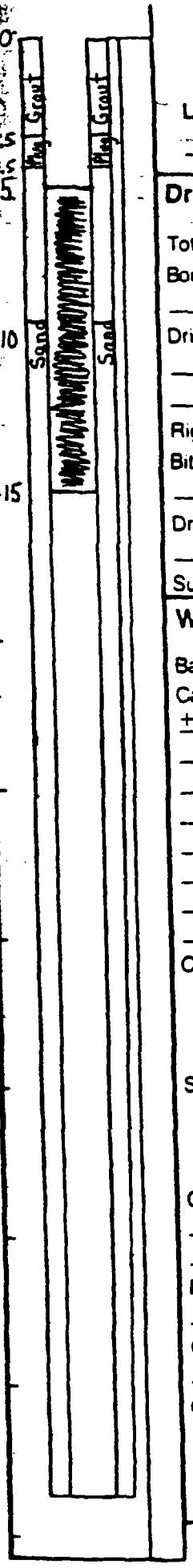
Well Construction Summary

MW-7

Location or Coords: At Cemetary (100F)

Elevation Ground Level 796.71

Top of Casing 799.53



Drilling Summary:

Total Depth 30'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA - 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+3'	-	5'	C	5'	-	15'	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel
2" Diameter 0.01" Slot

S2

Centralizers

Filter Material Natural Sand

Cement Portland Cement Type III, mix of Bentonite

Other Quick Jel Bentonite and Bentonite Pellets

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	2/22	1345	2/22	1545
Geophys. Logging				
Casing				
	2/24	1000	2/24	1015
Filter Placement	2/24	1015	2/24	1030
Cementing	2/24	1100	2/24	1120
Development				
Other				
Plug	2/24	1030	2/24	1100

Well Development:

Pumped and bailed, approximately 75 gal was pumped

Comments:

Well was hard to get silt free. It would clear-up, but would silt-in fast.

THIS MONITORING WELL, MW-8 TO REMAIN IN PLACE, DO NOT REMOVE
4/29/89

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#7 OWNER:
LOCATION: Cemetery property ADDRESS:
TOTAL DEPTH 30'
SURFACE ELEVATION: 799.64 MSL WATER LEVEL: 791.88 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 2/22/86
DRILLER: Ron Mathes HELPER: Bill Wilkins
LOG BY: Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		1	SS	7 18"	OH: Black, silty clay soil trace of gravels, vapor screening BG.
		2	SS	16 3"	OL: Black, silty clay organic matter, trace of sand, vapor screening BG.
5					
		3	SS	4 15"	SC: Black to brown, clayey sandy soil, trace gravels, vapor screening BG.
		4	SS	4 8"	SC: Dark and light brown, clayey sand and gravel, vapor screening BG.
10					
		5	SS	25 12"	SW-ML: Light brown to gray, top 2" sand and gravel grading to a thinnly laminated clayey silt, vapor screening BG.
		6	SS	34 15"	ML-SP: Gray to brown, top 7" gray clayey silt grading to a poor sorted medium to coarse sand, wet, vapor screening BG.
15					
		7	SS	22 19"	SW: Brown to grayish brown coarse sand with gravel toward bottom, wet. vapor screening, BG.
		8	SS	55 14"	SW: Brown gravelly sand, well graded, wet, vapor screening BG

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#7
LOCATION: Cemetary property
OWNER:
ADDRESS:
TOTAL DEPTH 30'
SURFACE ELEVATION: 799.64MSL
WATER LEVEL: 791.88MSL
DRILLING COMPANY: Alt&Witzig
DRILLING METHOD: HSA
DATE DRILLED: 2/22/86
DRILLER: Ron Mathes
HELPER: Bill Wilkins
LOG BY: Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
		9	SS	26 12"	SP: Brown medium to coarse gravelly sand, wet, vapor screening BG.
25		10	SS	33 12"	SP: Brown, medium to coarse sand and gravel, poorly graded, wet, vapor screening BG.
		11	SS	31 10"	SP: Brown, fine to medium sand with gravel, poorly graded, wet, vapor screening BG.
30					
35					
40					

* A.S.T.M. D1586

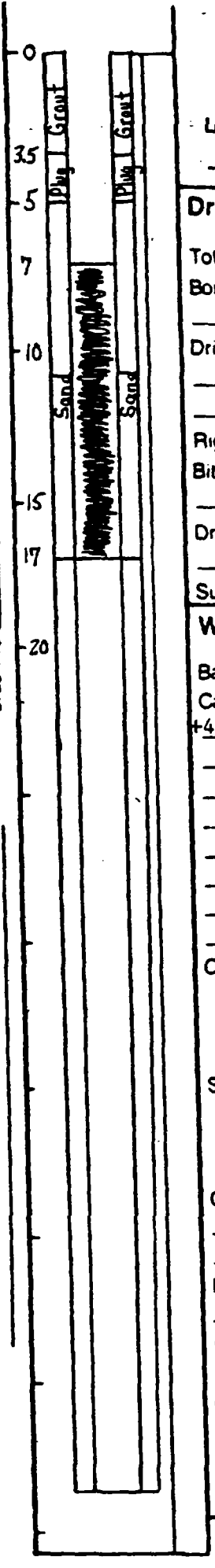
Well Construction Summary

MW-8

Location or Coords: Burns Property on on Lincoln Ave.

Elevation: Ground Level 804.96

Top of Casing 808.04



Drilling Summary:

Total Depth 18.5'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+4.92'	-	7'	C	7'	- 17'	S
	-				-	
	-				-	
	-				-	
	-				-	
	-				-	
	-				-	
	-				-	

Casing: C1 Stainless Steel 2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel 2" Diameter 0.01" Slot

S2

Centralizers

Filter Material Natural Sand and 1 bag Silica Sand

Cement Portland Type III cement and Bentonite Mix

Other Bentonite Pellets

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	2/24	1430	2/24	1730
Geophys. Logging				
Casing				
	2/25	0920	2/25	0930
Filter Placement	2/25	0930	2/25	1000
Cementing	2/25	1020	2/25	1150
Development				
Other				
Plug	2/25	1000	2/25	1020

Well Development:

Pumped and bailed, approximately 50 gal pumped are bailed from well

Comments:

THIS MONITORING WELL, MW-8 TO REMAIN IN PLACE, NOT REMOVED MP, 1/12/89

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#8 OWNER:
LOCATION: Burn's property ADDRESS:
TOTAL DEPTH 18.5'
SURFACE ELEVATION: 808.02MSL WATER LEVEL: 799.0 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 2/24/86
DRILLER: Ron Mathes HELPER: Bill Wilkins
LOG BY: Richard Gnat

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
		1	SS	19 13"	ML: Dark brown, sandy gravely clay, organics, vapor screening BG.
		2	SS	11 15"	SC: Brown, clayey sand becoming lighter towards bottom, vapor screening BG.
5					
		3	SS	14 8"	SC: Dark brown, sandy clay with some gravels, vapor screening BG.
		4	SS	10 12"	SW: Light brown, fine to medium sand, well graded, wet, vapor screening BG.
10					
		5	SS	35 15"	SW: Light brown, fine to medium sand, well graded, wet, vapor screening BG.
		6	SS	30 13"	SW: Light brown, fine to medium sand, well graded, wet, vapor screening BG.
15					
		7	SS	33 12"	SW: Light brown, fine to medium sand, well graded, wet, vapor screening BG.
		8	SS	39 18"	SW: Light brown, fine to medium sand, well graded, wet, vapor screening BG.
20					

* A.S.T.M. D1586

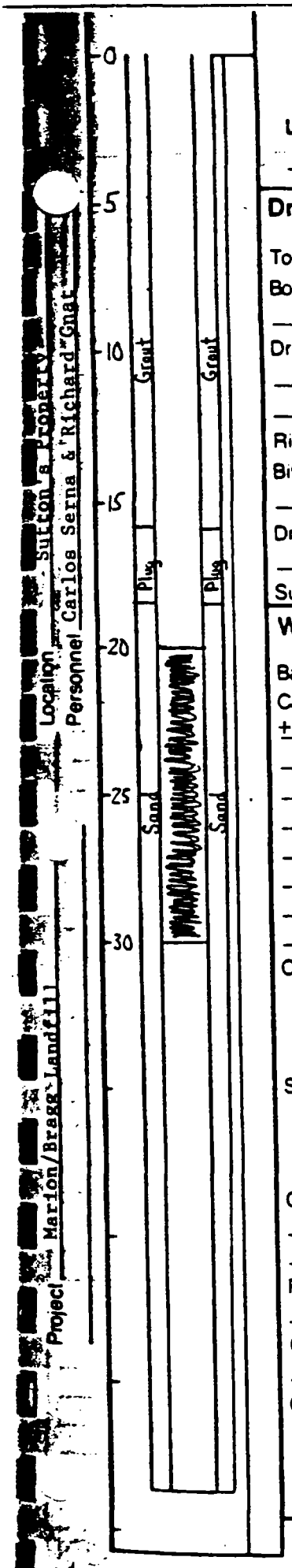
Well Construction Summary

Well MW-9

Location or Coords: On Sutton's property, off Monroe Pike

Elevation Ground Level 800.71'

Top of Casing 803.28'



Drilling Summary:

Total Depth 31.5'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25' I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+3.4'	- 20'	C	20'	- 30'	S
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	
	-			-	

Casing: C1 Stainless Steel 2" Diameter Flush Thread

C2

Screen: S1 Stainless Steel 2" diameter 0.01" Slot

S2

Centralizers

Filter Material Natural Sand and Silica Sand

Cement Portland Cement Type III, with mixture of Bentonite

Other Voloclay Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	3/10	1325	3/10	1500
Geophys Logging				
Casing				
	3/11	1440	3/11	1455
Filter Placement	3/11	1500	3/11	1520
Cementing	3/11	1600	3/11	1730
Development				
Other				
Plug	3/11	1520	3/11	1540

Well Development:

Pumped and bailed, approximately 50 gal

Comments:

THIS MONITORING WELL MW-9, TO REMAIN IN PLACE, NOT REMOVED.

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#9 OWNER:
LOCATION: Sutton's property ADDRESS:
TOTAL DEPTH 31.5'
SURFACE ELEVATION 803.77 MSL WATER LEVEL 792.39 MSL
DRILLING COMPANY: Alt & Witzig DRILLING METHOD: HSA DATE DRILLED: 3/10/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Richard Gnat & Paul Bartz

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
		1	SS	18 18"	ML to SP: Brown, sandy silty clay to coarse sand and gravel at bottom, moist, poorly graded, vapor screening
5		2	SS	27 14"	SP: Brown to tan, gravelly sand trace of silt, vapor screening BG.
		3	SS	39 7"	SO to SW: Brown to tan, gravelly sand poorly sorted changing to well sorted medium sand, vapor screening BG.
10		4	SS	38 14"	SW to SP: Tan to brown, well sorted medium sand, changing to a gravelly sand poorly sorted, vapor screening BG.
		5	SS	58 12"	SP: Brown to tan, coarse sand and gravel, poorly graded, vapor screening BG.
15		6		51 12"	SL to SP: Brown to gray, sandy to silty clay changing to a very coarse sand and gravel, poorly graded, vapor screening BG.
		7	SS	42 12"	SP: Brown to gray, silty coarse sand and gravel, poorly graded, vapor screening BG.
20		8	SS	51 10"	SP: Brown, medium to coarse silty sand, trace of clay.

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#9 OWNER:
LOCATION: Sutton's property ADDRESS:
TOTAL DEPTH 31.5'
SURFACE ELEVATION: 803.77MSL WATER LEVEL: 792.39 MSL
DRILLING COMPANY: Alt&Witzig DRILLING METHOD: HSA DATE DRILLED: 3/10/86
DRILLER: Ron Mathes HELPER: Bill Wilkins

LOG BY: Richard Gnat & Paul Bartz

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					Poorly graded, vapor screening BG.
		9	SS	45 14"	SP: Light gray, very silty fine sand with trace of gravel, poorly graded, vapor screening BG.
25		10	SS	61 12"	SP: Light gray, very silty fine sand, with trace of gravel, poorly graded, vapor screening BG.
		11	SS	104 18"	SP: Light gray, silty fine sand trace of gravels, tight and stiff, poorly graded, vapor screening BG
30		12	Den-eson	18"	CL: Light gray, silty clay, very dense, stiff and massive, trace of gravels.
35					
40					

* A.S.T.M. D1586

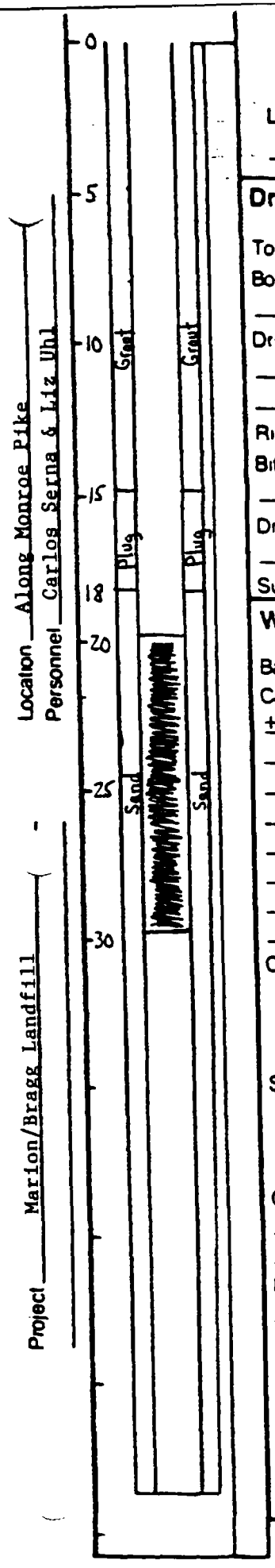
Well MW-10

Well Construction Summary

Location or Coords: North of the site along Monroe Pike

Elevation: Ground Level _____

Top of Casing _____



Drilling Summary:

Total Depth 30'

Borehole Diameter 8"

Driller ATEC Associates

Rig Mobal B-50

Bit(s) HSA - 4.25" I.D.

Drilling Fluid NONE

Surface Casing _____

Well Design:

Basis: Geologic Log X Geophysical Log ____

Casing String(s): C = Casing S = Screen

+2.5'	-	19.5'	C	19.5'	-	29.5'	S
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____
____	-	____	____	____	-	____	____

Casing: C1 Stainless Steel - 304 Flush Thread - 2" Diameter

C2 _____

Screen: S1 Stainless Steel - 304 0.01" Slot - 2" Diameter

S2 _____

Centralizers _____

Filter Material Silica Sand and Natural Sand

Cement Portland Type III

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling:	1986		1986	
HSA	7/10	1500	7/10	1630
Geophys Logging:				
Casing	7/10	1630	7/10	1700
Filter Placement	7/10	1700	7/10	1730
Cementing	7/10	1800	7/10	1830
Development				
Other:				
Plug	7/10	1730	7/10	1800

Well Development:

Compressed Air - Nitrogen

Comments:

Till encountered at 29 feet.

THIS MONITORING WELL, MW-10, TO REMAIN IN PLACE, NOT REMOVED

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW#10
LOCATION: 3/4 mile east of Penn. St on Monroe Pike
OWNER:
ADDRESS:
TOTAL DEPTH
SURFACE ELEVATION:
WATER LEVEL:
DRILLING COMPANY: Atec
DRILLING METHOD: HSA
DATE DRILLED: 7/10/86
DRILLER:
HELPER:
LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					Brown, silty sand, fill bricks and concrete, dry
		1	ss	2-1-2 5"	Brown, silty fine sand, trace of clay, fill bricks and clay, moist
5		2	ss	4-6-8 6"	Brown, clayey silt with trace of fine sand, top 3" evidence of fill, moist
		3	ss	3-4-6 8"	Light brown, silty fine sand, plant roots, some oxidation, moist
10					NR - Pushing Rock -
		4	ss	4-3-2 16"	Light brown to dark gray, top 8" silty fine to medium sand, grading to clayey silt with trace of fine sand - black organic with shall fragments. Moist
15		5	ss	2-2-5 18"	Gray to brown, top is clayey fine sand with much organic detritus (leafs roots) to a brown clayey fine sand trace of organic detritus and evidence of oxidation, moist
		6	ss	9-15-14 18"	Light brown, coarse sand and gravel evidence. Silt, wet
20					

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW#10 OWNER: _____

LOCATION: 3/4 mile east of Penn. St. on Monroe Pike ADDRESS: _____

TOTAL DEPTH _____

SURFACE ELEVATION: _____ WATER LEVEL: _____

DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/10/86

DRILLER: _____ HELPER: _____

LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20		7	ss	6-8-11 16"	Light brown, coarse sand and gravel trace of silt, wet
		8	ss	3-4-8 18"	Light brown, coarse sand and gravel trace of silt, wet
25		9	ss	2-3-5 15"	Gray, silty clay, (Till) very stiff and dense, trace of small gravels. Dry
30					
35					
40					

* A.S.T.M. D1586

Well Construction Summary MW-11

Location or Coords: Along Monroe Pike

Elevation: Ground Level

Top of Casing

Drilling Summary:

Total Depth 72'

Borehole Diameter 8"

Driller ATEC Associates

Rig Mobal B-50

Bit(s) HSA

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.5'	55'	C	55'	65'	S

Casing: C1 Stainless Steel - 304 Flush Threaded - 2" Diameter

C2

Screen: S1 2" Diameter Stainless Steel, 0.01" Slot

S2

Centralizers

Filter Material Sand Wash

Cement Bentonite - Cement Mixture

Other Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	7/11	0900	7/12	1300
Geophys Logging				
Casing	7/12	1400	7/12	1480
Filter Placement	7/12	1430	7/12	1600
Cementing	7/12	1730	7/12	1830
Development				
Other				
Plug	7/12	1600	7/12	1730

Well Development:

Compressed Air - Nitrogen

Comments:

Till encountered at 64.5 feet

THIS MONITORING WELL. MW-11, TO REMAIN IN PLACE, NOT REMOVED.

WESTON DESIGNERS CONSULTANTS

Project Marion/Bragg Landfill

Location Along Monroe Pike

Personnel L12 Uhl & Carlos Serna

0 10 20 30 40 50 52 55 60 65 70

Grout Grout Plug Plug

DRILLING LOG

WELL NUMBER: MW-11 OWNER: US EPA

LOCATION: West of Shannon property on Monroe Pike ADDRESS:

TOTAL DEPTH

SURFACE ELEVATION: WATER LEVEL:

DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/11/86

DRILLER: Dan HELPER: Charles

LOG BY: E. Uhl

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		02	ss	6" 5 8 13	Brown, silty clay trace of sand and gravel, stiff to very stiff
5		02	ss	13" 22 33 77	Brown, silty clay trace sand and gravel (first 5") to a tan to brown, med. to coarse sand and gravel, evidence of iron oxide staining
		03	ss	12" 28 35 36	Light brown to reddish brown, med. to coarse sand and gravel, trace silt
10		04	ss	18" 23 60 47	Light brown to reddish brown, med. to coarse sand and gravel, trace silt
		05	ss	15" 10 14 18	Light brown to tan, fine to medium sand trace gravels, wet
15		06	ss	18" 20 28 36	Light brown to tan, fine to medium sand, trace of gravel, wet
		07	ss	18" 24 24 20	Light brown to tan, fine to medium sand, trace of gravel, wet
20					

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW-11
LOCATION: West of Shannon property on Monroe Pike
OWNER: US EPA
ADDRESS:
TOTAL DEPTH
SURFACE ELEVATION:
WATER LEVEL:
DRILLING COMPANY: Atec
DRILLING METHOD: HSA
DATE DRILLED: 7/11/86
DRILLER: Dan
HELPER: Charles
LOG BY: E. Uhl

SKETCH MAP

NOTES:

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20	08	ss	18" 7 7 7	Light brown to reddish tan, fine to coarse sand and gravel, trace silt, wet
	09	ss	18" 10 7 8	Light brown to reddish tan, fine to coarse sand with gravels, trace silt. Wet
25	10	ss	18" 4 2 12	(Top 12") Light brown, fine to coarse sand and gravel, 12" to 16" gray clayey silt, last fine to medium gray sand
	11	ss	18" 8 15 22	Gray, fine to medium sand, wet
30				
	12	ss	18" 15 10 21	Gray, fine to medium sand trace silt, wet
35				
	13	ss	18" 10 26 50	Gray, fine to medium sand, trace silt, wet
40				

* A.S.T.M. D1586

DRILLING LOG

WELL NUMBER: MW-11 OWNER: US EPA
LOCATION: West of Shannon property on Monroe Pike ADDRESS:
TOTAL DEPTH
SURFACE ELEVATION: WATER LEVEL:
DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/12/86
DRILLER: Dan HELPER: Charles
LOG BY: E. Uhl and C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
45		14	ss	18" 19 34 46	Gray, fine to medium sand, trace of gravel and silt, wet
50		15	ss	18" 40 62 7	Gray, fine to medium sand, trace silt, wet
55		16	ss	18" 50/5	Gray, fine to medium sand, trace silt, wet
60		17	ss	18" 27 40 48	Gray, fine sand, trace silt, wet

* A.S.T.M. D1586

DRILLING LOG

WELL NUMBER: MW-11 OWNER: US EPA
LOCATION: West of Shannon property on Monroe Pike ADDRESS:
TOTAL DEPTH
SURFACE ELEVATION: WATER LEVEL:
DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/12/86
DRILLER: Dan HELPER: Charles

LOG BY: E. Uhl and C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
60					
65		18	ss	18" 16 30 52	(Top 7 inches) fine gray sand, trace silt, wet (Bottom 7 inches) gray, silty clay, dissuminated gravel and trace silt
		19	ss	18" 15 36 50	Gray, silty clay, trace fine sand and gravel
70		20	sh	2'	Gray, silty clay, trace of fine sand and gravel
75					

* A.S.T.M D1586

Well MW-12

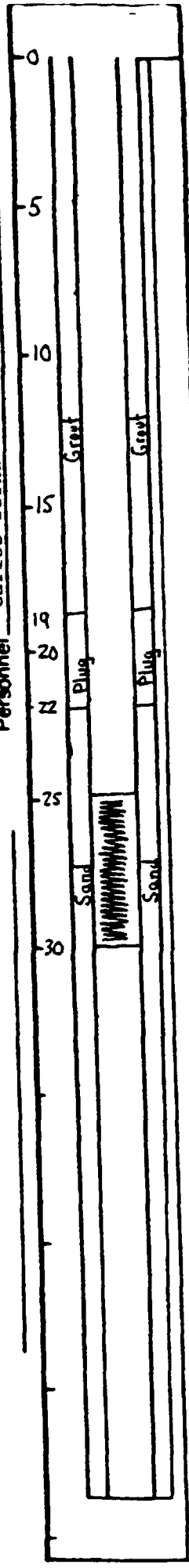
Well Construction Summary

Location or Coords: Next to FIT well #3 on north side of site

Elevation. Ground Level

Top of Casing

Location Next to FIT Well #3
Personnel Carlos Serna
Project Marion/Bragg Landfill



Drilling Summary:

Total Depth 35'
Borehole Diameter 8"
Driller ATEC Associates
Rig Mobal B-50
Bit(s) HSA
Drilling Fluid NONE
Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.5' -	25'	C	25' -	30'	S
-			-		
-			-		
-			-		
-			-		
-			-		
-			-		
-			-		

Casing: C1 Stainless Steel - 304 Flush Threaded - 2" Diameter

C2

Screen: S1 Stainless Steel 0.01" Slot 2" diameter

S2

Centralizers

Filter Material Washed Sand

Cement Bentonite - Cement Mixture

Other Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	7/15	1200	7/15	1400
Geophys Logging				
Casing				
	7/16	0730	7/16	0800
Filter Placement	7/16	0800	7/16	0830
Cementing	7/16	0900	7/16	0945
Development				
Other				
Plug	7/16	0830	7/16	0900

Well Development:

Compressed Air - Nitrogen

Comments:

Till encountered at 32 feet

WESTON DESIGNERS CONSULTANTS

DRILLING LOG

WELL NUMBER: MW-12
LOCATION: Next to FIT Well-3 on north side of site
SURFACE ELEVATION: _____
DRILLING COMPANY: Atec
DRILLER: Dan
LOG BY: C. Serna

OWNER: _____
ADDRESS: _____
TOTAL DEPTH _____
WATER LEVEL: _____
DRILLING METHOD: HSA
DATE DRILLED: 7/15/86
HELPER: Charles

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					- Geologic log provided from FIT Well-3. drill cuttings were - light brown sand with trace gravel and silt. Fill natural encountered from 6.5' to 17'.
5					
10					
15					
20		1	ss	16" 12 9 20	Light brown, medium sand and gravel, with trace of silt

* A.S.T.M. D1586

WESTON

DRILLING LOG

WELL NUMBER: MW-12 OWNER: _____

LOCATION: Next to FIT well on north side of site ADDRESS: _____

TOTAL DEPTH _____

SURFACE ELEVATION: _____ WATER LEVEL: _____

DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/15/86

DRILLER: Dan HELPER: Charles

LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20		2	ss	18" 18 16 14	Gray to light brown (color change at 22') medium to coarse sand and gravel, wet
		3	ss	16" 20 10 12	Light brown, medium sand and gravel with trace silt, wet
25		4	ss	18" 30 36 45	Light brown to gray, coarse sand and gravel, trace silt, wet
30					Drillers observation encountering till unit
		5	ss	18" 27 25 45	Gray, silty clay, trace medium gravels, stiff and hard
35					
40					

* A.S.T.M. D1586

Well MW-13

Well Construction Summary

MW-13

Location or Coords: NW part of site

Elevation. Ground Level

Top of Casing

Drilling Summary:

Total Depth 25'

Borehole Diameter 8"

Driller ATEC Associates

Rig Mobal B-50

Bit(s) HSA

Drilling Fluid NONE

Surface Casing

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	7/16	1230	7/16	1800
Geophys Logging				
Casing	7/17	0830	7/17	0900
Filter Placement	7/17	0900	7/17	0920
Cementing	7/17	0945	7/17	1030
Development				
Other				
Plug	7/17	0920	7/17	0945

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.5' -	20'	C	20' -	25'	S

Casing: C1 Stainless Steel - 304 Flush Threaded - 2" Diameter

C2

Screen: S1 Stainless Steel 0.01" Slot 2" Diameter

S2

Centralizers

Filter Material Washed Sand

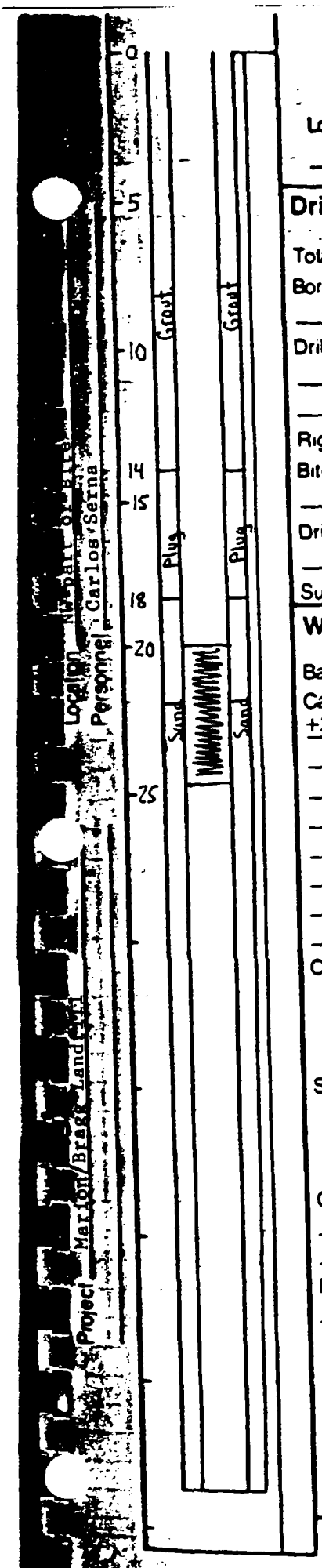
Cement Bentonite and Cement

Other Bentonite

Well Development:

Compressed Air - Nitrogen

Comments:



DRILLING LOG

WELL NUMBER: MW-13 OWNER: US EPA
LOCATION: North part of site ar far west side ADDRESS:
TOTAL DEPTH
SURFACE ELEVATION: WATER LEVEL:
DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/16/86
DRILLER: Dan HELPER: Charles
LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0					
5		1	ss	1 2 1 (18")	Grayish tan, medium to coarse sand and gravel, trace silt, metal scraps
10		2	ss	2 1 2 (20")	Grayish tan, medum to coarse sand and gravel, some fill (metal, paper)
15		3	ss	11 22 12 (0)	N.R. probably a gravel or Fill plug
20		4	ss	12 14 10 (12")	Gray, coarse sand and gravel, trace of silt

* A.S.T.M. D1586

DRILLING LOG

WELL NUMBER: MW-13 OWNER:

LOCATION: North part of site at far west side ADDRESS:

TOTAL DEPTH:

SURFACE ELEVATION: WATER LEVEL:

DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/16/86

DRILLER: Dan HELPER: Charles

LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
20					
25		5	ss	16" 18 16 12	Gray, medium to coarse sand and gravel, trace silt

* A.S.T.M. D1586

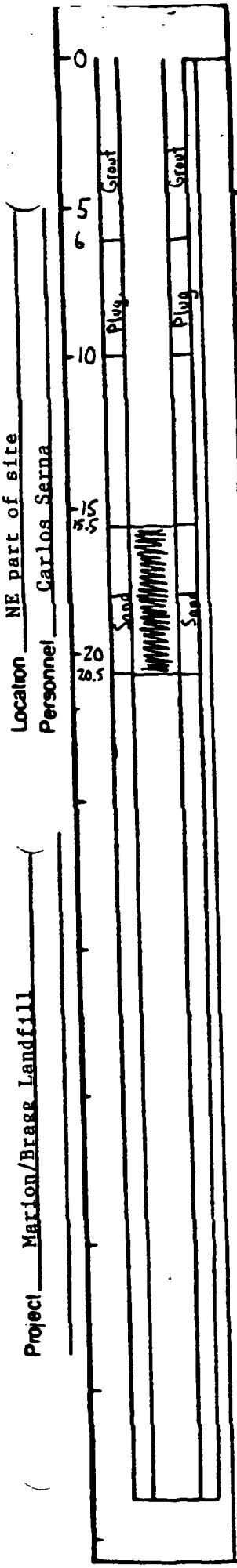
Well MW-14

Well Construction Summary

Location or Coords: NE part of site

Elevation. Ground Level

Top of Casing



Drilling Summary:

Total Depth 21'

Borehole Diameter 8"

Driller ATEC Associates

Rig Mobal B-50

Bit(s)

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.5'	15.5'	C	15.5'	20.5'	S

Casing: C1 Stainless Steel - 304 Flush Threaded - 2" Diam.

C2

Screen. S1 Stainless Steel 0.01" Slot 2" Diameter

S2

Centralizers

Filter Material Washed Sand

Cement Bentonite and Cement

Other Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling HSA	7/17	1200	7/17	1830
Geophys Logging				
Casing	7/18	0830	7/18	0900
Filter Placement	7/18	0900	7/18	0930
Cementing	7/18	1030	7/18	1200
Development				
Other Plug	7/18	0930	7/18	1030

Well Development:

Compressed Air - Nitrogen

Comments:

WESTON DESIGNERS CONSULTANTS

WESTON

DRILLING LOG

WELL NUMBER: MW-14 OWNER: US EPA

LOCATION: North part of site at far east side ADDRESS:

TOTAL DEPTH

SURFACE ELEVATION: WATER LEVEL:

DRILLING COMPANY: Atec DRILLING METHOD: HSA DATE DRILLED: 7/17/86

DRILLER: Dan HELPER: Charles

LOG BY: C. Serna

SKETCH MAP

NOTES:

DEPTH (FEET)	GRAPHIC LOG	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS*	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		1	ss	16" 10 8	Gray, sand and gravel (coarse) with mixture of wood and plastic
5					
		2	ss	10" 4 6 10	Black organic fill material, plastic and paper
10					
		3	ss	18" 15 12 10	Gray to light brown, medium sand and gravel, trace silt
15					
		4	ss	18" 16 12 24	Gray to light brown, medium to coarse sand and gravel trace silt, wet
20					

* A.S.T.M. D1586

SHEET 1 OF 1

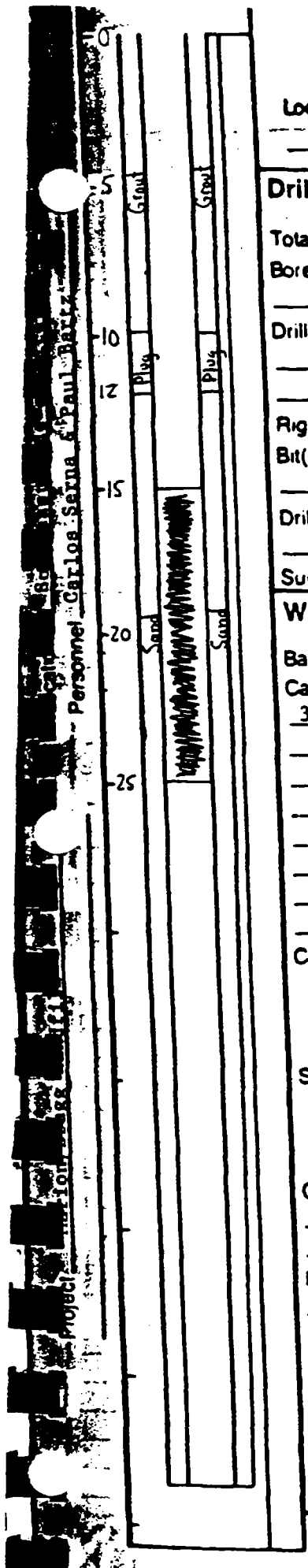
Well Construction Summary

LW-1

Location or Coords: Southeast side of site

Elevation: Ground Level _____

Top of Casing _____



Drilling Summary:

Total Depth 27.5'

Borehole Diameter 8"

Driller Alt & Witzig

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing _____

Well Design:

Basis: Geologic Log X Geophysical Log ____

Casing String(s): C = Casing S = Screen

3'	-	15'	C	15'	-	25'	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel - 304
2" Diameter Flush Thread

C2 _____

Screen: S1 Stainless Steel - 304
2" Diameter 0.01" Slot

S2 _____

Centralizers _____

Filter Material Silica Sand

Cement Portland Type III with Bentonite Mixture

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	3/8	1140	3/8	1500
Geophys Logging				
Casing				
	3/8	1500	3/8	1530
Filter Placement	3/8	1530	3/8	1630
Cementing	3/8	1730	3/8	1830
Development				
Other				
Plug	3/8	1630	3/8	1730

Well Development:

Not Developed

Comments:

"DRILLING LOG" NOT AVAILABLE. PER ERM 1/6/89

WESTON DESIGNERS CONSULTANTS

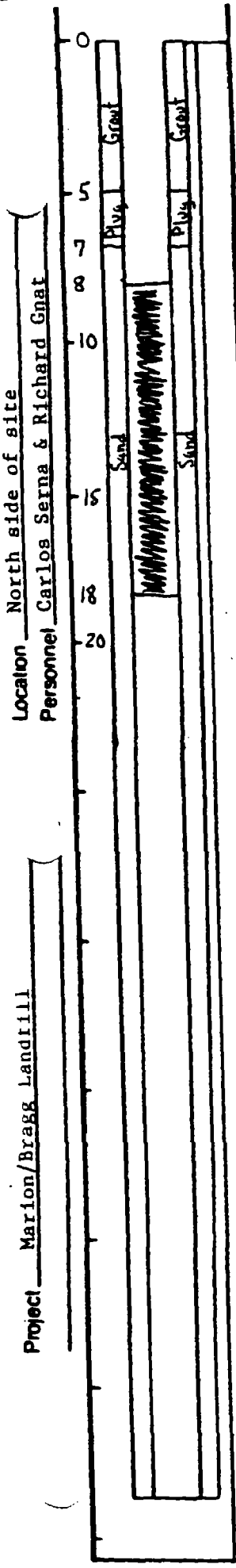
Well LW-2

Well Construction Summary

LW-2

Location or Coords: North side of site Elevation. Ground Level: ____

Top of Casing: ____



Location: North side of site

Personnel: Carlos Serna & Richard Gnat

Project: Marion/Bragg Landfill

Drilling Summary:

Total Depth: 19.5'

Borehole Diameter: 8"

Driller: Alt & Witzig

Rig: Mobal B-57

Bit(s): HSA - 4.25" I.D.

Drilling Fluid: NONE

Surface Casing: ____

Well Design:

Basis: Geologic Log X Geophysical Log ____

Casing String(s): C = Casing S = Screen

+2'	-	8'	C	18'	-	8'	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel - 304
2" Diameter Flush Thread

C2 ____

Screen: S1 Stainless Steel - 304
0.01" Slot 2" Diameter

S2 ____

Centralizers: ____

Filter Material: Silica Sand

Cement: Portland Type III with Bentonite Mixture

Other: Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	3/7	0900	3/7	1100
Geophys Logging				
Casing				
	3/7	1100	3/7	1130
Filter Placement	3/7	1130	3/7	1400
Cementing	3/7	1500	3/7	1530
Development				
Other				
Plug	3/7	1400	3/7	1500

Well Development:

Not Developed

Comments:

"DRILLING LOG" NOT AVAILABLE, PER ERM 1/6/89 mp

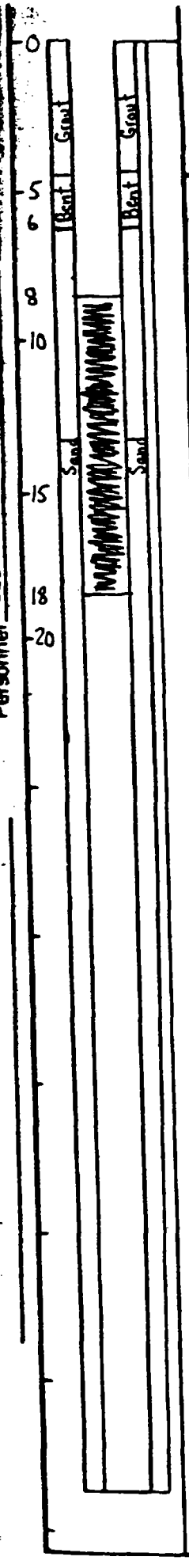
WESTON DESIGNERS CONSULTANTS

Well Construction Summary LW-3

Location or Coords: North side of site

Elevation. Ground Level 801.90

Top of Casing 803.83



Drilling Summary:

Total Depth 22'

Borehole Diameter 8"

Driller Alt & Witzig
Ron Mathes
Bill Wilkins

Rig Mobal B-57

Bit(s) HSA 4.25" I.D.

Drilling Fluid NONE

Surface Casing

Well Design:

Basis: Geologic Log X Geophysical Log

Casing String(s): C = Casing S = Screen

+2.13'		8'	C	8'	-	18'	S
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		
	-				-		

Casing: C1 Stainless Steel
2" Diameter Flush Threaded

C2

Screen: S1 Stainless Steel
2" Diameter 0.01" Slot

S2

Centralizers

Filter Material Silica Sand

Cement Portland Type III
with Bentonite mixture

Other Quick Jel Bentonite

Construction Time Log:

Task	Start Date	Start Time	Finish Date	Finish Time
Drilling	1986		1986	
HSA	3/10	1320	3/10	1600
Geophys Logging				
Casing				
	3/10	1600	3/10	1700
Filter Placement	3/10	1700	3/10	1800
Cementing	3/10	1800	3/10	1830
Development				
Other				
Plug	3/10	1800	3/10	1815

Well Development:

Not Developed

Comments:

"DRILLING LOG" NOT AVILABLE, PER ERM

WESTEC SERVICES CONSULTANTS

RECORD OF WATER WELL

State Form 35680 (R3 / 11-87)

REC'D FROM I.D.E.M. 2/9/89

Mail complete record within 30 days to:
INDIANA DEPARTMENT OF NATURAL RESOURCES
Division of Water
2475 Directors Row
Indianapolis, Indiana 46241
Telephone number (317) 232-4160

(Fill in completely)

WELL LOCATION

nty where drilled	Civil township	Township	Range	Section
Grant	Center			

Driving directions to the well location (include county road names, number, subdivisions lot number with consideration to intersecting, road and trip origination there is space for a map on reverse side.

Marion Sanitary Landfill
Central Ave

"LFW"
DRINKING WATER WELL
TO BE ABANDONED

OWNER - CONTRACTOR

Name of well owner: Decatur Salvage	Telephone Number ( )
Address *(Street and number, city, state)*	ZIP code
Name of building contractor	Telephone number ( )
Address *(Street and number, city, state)*	ZIP code
Name of drilling contractor	Telephone number ( )
Address *(Street and number, city, state)*	ZIP code

Name of equipment operator	License number	Date of completion
		8-7-75

CONSTRUCTION DETAILS

Use of well:
☐ Home ☐ Industry ☐ Test ☐ Irrigation
☐ Public supply ☐ Stock ☐ Other *(specify)*: Landfill

Method of drilling:
☐ Cable tool ☒ Rotary ☐ Jet ☐ Rev. rotary ☐ Bucket rig ☐ Other

Casing length	Material	Diameter
1 1/2 feet	PVC	5" inches

Screen length	Material	Diameter
feet		inches

Screen slot size: | Total depth of well:

Depth of pump setting: | Water quality *(Clear, cloudy, odor, etc.)*:

Type of pump:
☐ Submersible ☐ Shallow-well jet ☐ Deep-well jet ☐ Other *(specify)*:

WELL CAPACITY TEST

Check one: ☐ Bailing ☒ Pumping ☐ Air

Test rate: 15 gpm ____ hrs.

Drawdown: feet | Static level (depth to water) 5.3 feet

GROUTING INFORMATION

Grout material	Depth of grout From	To	Method of installation	Number of bags used

WELL ABANDONMENT

Sealing material	Depth filled From	To	Method of installation	Number of bags used

WELL LOG

Formations: type of material	From (Feet)	To (Feet)
gravel	0	33
gravel & sand	33	52
clay	52	112 ~~360~~
limestone	112 ~~360~~	360
Blue Shale	360	-362

(Additional space for well log on reverse side)

I hereby swear or affirm, under the penalties for perjury that the information submitted herewith is to the best of my knowledge and belief, true, accurate and complete.

Signature of owner of authorized representative:

Date: 8-7-75

FOR ADMINISTRATIVE USE ONLY
(well driller does not fill out)

County	Township	Range	¼ ¼	Section

Topo map	Ft. W of EL	Ground elevation	Subdivision name
Field located By Date	Ft. N of SL	Depth to bedrock	Lot number
Courthouse location By Date	Ft. E of WL	Bedrock elevation	U.T.M.
Location accepted w / o verification by	Ft. S of NL	Aquifer elevation	

(continued from front side)

WELL LOG Formations: type of material	FROM Feet	TO Feet

SKETCH SHOWING LOCATION
(Locate with reference to highways, intersecting county roads and distinctive landmarks.)

N

W E

S

RECORD OF WATER WELL

State Form 35680 (R3 / 11-87)

Mail complete record within 30 days to:
INDIANA DEPARTMENT OF NATURAL RESOURCES
Division of Water
2475 Directors Row
Indianapolis, Indiana 46241
Telephone number (317) 232-4160

(Fill in completely)

WELL LOCATION

unty where drilled	Civil township	Township	Range	Section
Grant				

Driving directions to the well location (include county road names, number, subdivisions lot number with consideration to intersecting, road and trip origination there is space for a map on reverse side.

MARION
PIKING

OWNER - CONTRACTOR

Name of well owner: Marion Paving	Telephone Number: ( )
Address (Street and number, city, state): 2627 Central Ave Marion	ZIP code
Name of building contractor	Telephone number: ( )
Address (Street and number, city, state)	ZIP code
Name of drilling contractor: Helvie & Sons Inc	Telephone number: ( )
Address (Street and number, city, state): 5418 Lincoln Blvd Marion In	ZIP code

Name of equipment operator	License number	Date of completion
James Helvie		12-10-87

CONSTRUCTION DETAILS

e of well:
☐ Home ☐ Industry ☐ Test ☐ Irrigation
☐ Public supply ☐ Stock ☐ Other (specify): _____

Method of drilling:
☐ Cable tool ☐ Jet ☐ Rotary ☐ Rev. rotary ☐ Bucket rig ☐ Other

Casing length	Material	Diameter
63 feet	PVC	5 inches

Screen length	Material	Diameter
5 feet	PVC	5 inches

Screen slot size: 60
Total depth of well: 67
Depth of pump setting:
Water quality (Clear, cloudy, odor, etc.):

Type of pump
☐ Submersible ☐ Shallow-well jet ☐ Deep-well jet ☐ Other (specify): _____

WELL CAPACITY TEST

Check one: ☐ Bailing ☒ Pumping ☐ Air
Test rate: 30 gpm _____ hrs.
Drawdown: _____ feet
Static level (depth to water): 31 feet

GROUTING INFORMATION

Grout material	Depth of grout From	To	Method of installation	Number of bags used

WELL ABANDONMENT

Sealing material	Depth filled From	To	Method of installation	Number of bags used

WELL LOG

Formations: type of material	From (Feet)	To (Feet)
fill	0	4
clay	4	13
gravel	13	48
clay	48	72

(Additional space for well log on reverse side)

I hereby swear or affirm, under the penalties for perjury that the information submitted herewith is to the best of my knowledge and belief, true, accurate and complete.

Signature of owner of authorized representative

Date

FOR ADMINISTRATIVE USE ONLY
(well driller does not fill out)

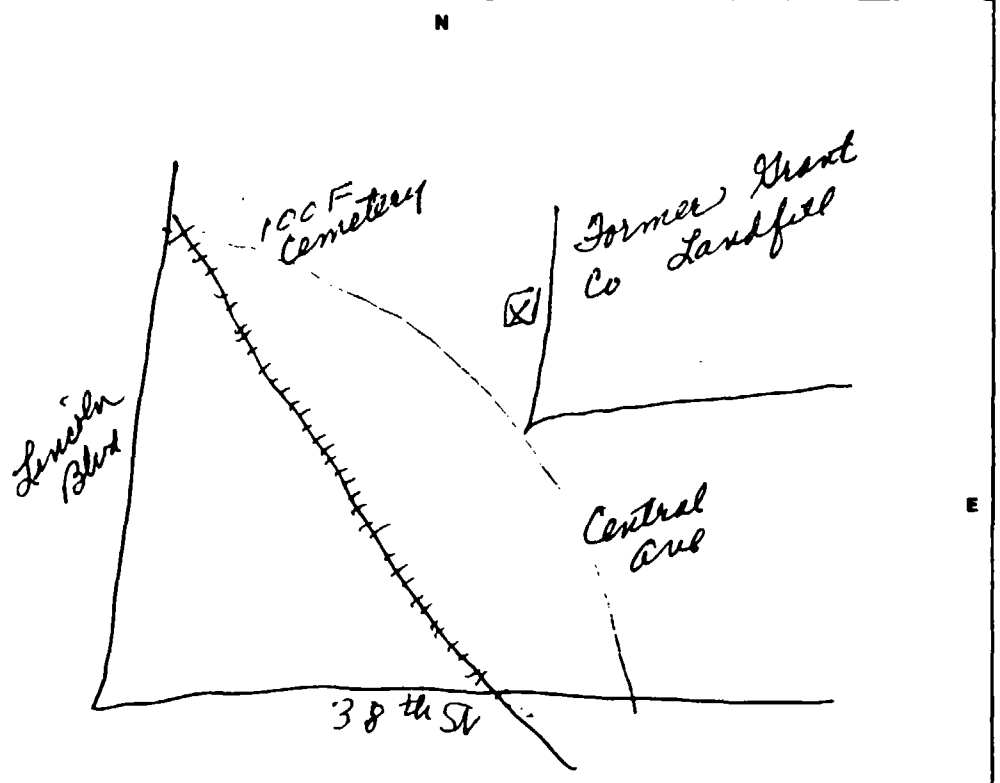
County	Township	Range	¼ ¼	Section

Topo map	Ft. W of EL	Ground elevation	Subdivision name
Field located By Date	Ft. N of SL	Depth to bedrock	Lot number
Courthouse location By Date	Ft. E of WL	Bedrock elevation	U.T.M.
Location accepted w / o verification by	Ft. S of NL	Aquifer elevation	

(continued from front side)

WELL LOG Formations: type of material	FROM Feet	TO Feet

SKETCH SHOWING LOCATION
(Locate with reference to highways, intersecting county roads and distinctive landmarks.)



2/6/89

WATER WELL RECORD

State Form 35680R2

REC'D 2/9/89 From I.D.E.M. up

Mail completed record within 30 days to:
DIVISION OF WATER
INDIANA DEPARTMENT OF NATURAL RESOURCES
2475 DIRECTORS ROW
INDIANAPOLIS, INDIANA 46241
PHONE (317) 232-4160

THIS DRINKING WATER WELL TO REMAIN

WELL LOCATION
(Fill in completely)

County where drilled: **Grant**

Civil Township: **Center**

Driving directions to the well location (Include county road names, numbers, subdivisions, lot number with consideration to intersecting roads and trip origination) There is space for a map on reverse side.

69 North to 18 West to Pennsylvania Ave. Left , cross river turn left pass cemetary on left.

OWNER — CONTRACTOR

Well owner: **Dobson Construction Co.**

Address: **Marion, In.**

Building contractor:

Address:

Drilling contractor: **Quick's Well Drilling Co.**

Address: **738 So. 600 East -- Marion, In. 46953**

Equipment operator: **Terry Taylor**

Completion date: **7-25-88**

CONSTRUCTION DETAILS

Type of well:
☒ Drilled ☐ Gravel pack ☐ Driven ☐ Other

Use of well:
☐ Home ☒ Industry ☐ Test ☐ Irrigation
☐ Public supply ☐ Stock ☐ Other (specify) _____

Method of drilling:
☐ Cable tool ☒ Rotary ☐ Jet ☐ Rev. rotary ☐ Bucket rig

Casing length	Diameter
45' feet	5" inches
Screen length	**Diameter**
5' feet	5" inches
Screen slot size	**Total depth**
60	50'

Depth of pump setting: **25'**

Type of pump:
☒ Submersible ☐ Shallow-well jet ☐ Deep-well jet ☐ Other (specify) _____

WELL CAPACITY TEST

(Check one)
☐ Bailing ☒ Pumping **By Air**

Test rate	Drawdown
45 gpm 2 hrs	-- feet

Static level (depth to water): **15'** feet

Water quality (clear, cloudy, odor, etc.): **Clear**

WELL LOG

Formations: type of material	From	To
Sand & Gravel	0 ft.	12 ft.
Gravel & Clay	12	17
Sand & Gravel	17	30 ½
Gray Clay	30	40
Gravel	40	50

(Additional space for Well Log on reverse side)

Signed: Monty S. Quick

Date: **7-25-88**

FOR ADMINISTRATIVE USE ONLY
(Well driller does not fill out)

County	Twp.	Rge.	¼ ¼	Sec.

Topo map	Ft. W of EL	Ground elevation	Subdivision name
Field located By Date	Ft N of SL	Depth to bedrock	Lot no.
Courthouse location By Date	Ft. E of WL	Bedrock elevation	
Location accepted w/o verification by	Ft. S of NL	Aquifer elevation	

WELL LOG
(Continued from front side)

Formations: type of material	From	To
	ft	ft

SKETCH SHOWING LOCATION
Locate with reference to highways, intersecting county roads, and distinctive landmarks.

N

W E

S